Spring 2014

The Journal of Learning in Higher Education

Volume 10 Issue 1

JOURNAL OF LEARNING IN HIGHER EDUCATION

# Contents

**Continuous, Real-Time Assessment of Every Student's Progress in the Flipped Higher Education Classroom Using Nearpod**
*Michael D. Mattei & Elizabeth Ennis* ..... 1

**Providing Deep Learning through Active Engagement of Adult Learners in Blended Courses**
*Dr. Darlene McDonough* ..... 9

**What makes a MOOC? Massive Open Online Courses (MOOCs) Compared to Mainstream Online University Courses**
*Timothy C. Johnston* ..... 17

**Critical Thinking in the Classroom…and Beyond**
*Linda M. Murawski* ..... 25

**Can Taking an IB Course Change Students' Attitudes towards International Affairs and Welfare of Other Countries?**
*Prasad Vemala, Jim (Jiun-Shiu) Chen, & Susie S. Cox* ..... 31

**Developing Research Skills for Undergraduate Business Students: Experiential Learning on Introduction to Personnel Administration and Industrial Relations Course**
*Carmen I. Figueroa & Cándida González* ..... 37

**A Test of Learning Concepts: Teaching Business Integration to the Freshman Business Student Learner via Podcasting**
*Richard Muller & Rand Wergin* ..... 45

**Group Projects with Millennials: The Question of Not Why…but How**
*Catherine Kendall , Jessica Etheredge, Dana Moody, & Ashley Cooper* ..... 53

**Self-Assessment and Student Improvement in an Introductory Computer Course at the Community College Level**
*Jama Spicer-Sutton, James Lampley, & Donald W. Good* ..... 59

**The Woodworker's Website: A Project Management Case Study**
*Marsha Jance* ..... 67

**Metacognition: Transforming Learning Experience**
*Emmanuel Chekwa, Misty McFadden, Angelia Divine, & Tina Dorius* ..... 71

VOLUME TEN ISSUE ONE
SPRING 2014

# JOURNAL OF LEARNING IN HIGHER EDUCATION

**JW PRESS**

**MARTIN, TENNESSEE**

ISSN: 1936-346X



Published by

JW Press

P.O. Box 49

Martin, Tennessee 38237

Printed in the United States of America

## Editor

**Dr. Edd R. Joyner**
**EddJoyner@AWoIC.org**

## Board of Reviewers

| Reviewer | Country | State/ Region | Affiliation |
|---|---|---|---|
| Ahmadi, Ali | United States | KY | Morehead State University |
| Akdere, Mesut | United States | WI | University of Wisconsin-Milwaukee |
| Alkadi, Ghassan | United States | LA | Southeastern Louisiana University |
| Allen, Gerald L. | United States | IL | Southern Illinois Workforce Investment Board |
| Allison, Jerry | United States | OK | University of Central Oklahoma |
| Altman, Brian | United States | WI | University of Wisconsin-Milwaukee |
| Anderson, Paul | United States | CA | Azusa Pacific University |
| Anitsal, Ismet | United States | TN | Tennessee Technological University |
| Anitsal, M. Meral | United States | TN | Tennessee Technological University |
| Arney, Janna B. | United States | TX | The University of Texas at Brownsville |
| Awadzi, Winston | United States | DE | Delaware State University |
| Bain, Lisa Z. | United States | RI | Rhode Island College |
| Barksdale, W. Kevin | United States | TN | Grand Canyon University |
| Barrios, Marcelo Bernardo | Argentina | | EDDE-Escuela de Dirección de Empresas |
| Bartlett, Michelle E. | United States | SC | Clemson University |
| Beaghan, James | United States | WA | Central Washington University |
| Bello, Roberto | Canada | Alberta | University of Lethbridge |
| Benson, Ella | United States | VA | Cambridge College |
| Benson, Joy A. | United States | WI | University of Wisconsin-Green Bay |
| Beqiri, Mirjeta | United States | WA | Gonzaga University |
| Berry, Rik | United States | AR | University of Arkansas at Fort Smith |
| Beyer, Calvin | United States | GA | Argosy University |
| Blankenship, Joseph C. | United States | WV | Fairmont State University |
| Boswell, Katherine T. | United States | TN | Middle Tennessee State University |
| Bridges, Gary | United States | TX | The University of Texas at San Antonio |
| Brown-Jackson, Kim L. | United States | | The National Graduate School |
| Buchman, Thomas A. | United States | CO | University of Colorado at Boulder |
| Burchell, Jodine M. | United States | TN | Walden University |
| Burrell, Darrell Norman | United States | VA | Virginia International University |
| Burton, Sharon L. | United States | DE | The National Graduate School |
| Bush, Richard | United States | MI | Lawrence Technological University |
| Byrd, Jane | United States | AL | University of Mobile |
| Caines, W. Royce | United States | SC | Southern Wesleyan University |
| Cano, Cynthia M. | United States | GA | Augusta State University |
| Cano, Cynthia Rodriguez | United States | GA | Georgia College & State University |
| Carey, Catherine | United States | KY | Western Kentucky University |
| Carlson, Rosemary | United States | KY | Morehead State University |
| Case, Mark | United States | KY | Eastern Kentucky University |
| Cassell, Macgorine | United States | WV | Fairmont State University |
| Cassell, Macgorine | United States | WV | Fairmont State University |

| Reviewer | Country | State/ Region | Affiliation |
|---|---|---|---|
| Caudill, Jason G. | United States | TN | American College of Education |
| Cezair, Joan | United States | NC | Fayetteville State University |
| Chan, Tom | United States | NH | Southern New Hampshire University |
| Chang, Chun-Lan | Australia | Queensland | The University of Queensland |
| Chen, Fang | Canada | Manitoba | University of Manitoba |
| Chen, Steve | United States | KY | Morehead State University |
| Clayden, SJ (Steve) | United States | AZ | University of Phoenix |
| Cochran, Loretta F. | United States | AR | Arkansas Tech University |
| Coelho, Alfredo Manuel | France | | UMR MOISA-Agro Montpellier |
| Collins, J. Stephanie | United States | NH | Southern New Hampshire University |
| Cosby-Simmons, Dana | United States | KY | Western Kentucky University |
| Cox, Betty | United States | TN | University of Tennessee at Martin |
| Cox, Susie S. | United States | LA | McNeese State University |
| Cunningham, Bob | United States | LA | Grambling State University |
| Dawson, Maurice | United States | CO | Jones International University |
| Deng, Ping | United States | MO | Maryville University Saint Louis |
| Dennis, Bryan | United States | ID | Idaho State University |
| Deschoolmeester, Dirk | Belgium | | Vlerick Leuven Gent Management School |
| Di, Hui | United States | LA | Louisiana Tech University |
| Durden, Kay | United States | TN | University of Tennessee at Martin |
| Dwyer, Rocky | Canada | Alberta | Athabasca University |
| El-Kaissy, Mohamed | United States | AZ | University of Phoenix |
| Eppler, Dianne | United States | AL | Troy State |
| Essary, Michael | United States | AL | Athens State University |
| Etezady, Noory | Iran | | Nova Southeastern University |
| Ethridge, Brandy | United States | OR | Social Science, Public Policy and Health Researcher |
| Fallshaw, Eveline M. | Australia | | RMIT University |
| Fausnaugh, Carolyn J. | United States | FL | Florida Institute of Technology |
| Fay, Jack | United States | KS | Pittsburg State University |
| Festervand, Troy A. | United States | TN | Middle Tennessee State University |
| Finch, Aikyna | United States | CO | Strayer University |
| Finlay, Nikki | United States | GA | Clayton College and State University |
| Flanagan, Patrick | United States | NY | St. John's University |
| Fleet, Greg | Canada | New Brunswick | University of New Brunswick in Saint John |
| Fontana, Avanti | Indonesia | | University of Indonesia |
| Foster, Renee | United States | MS | Delta State University |
| Fry, Jane | United States | TX | University of Houston-Victoria |
| Garlick, John | United States | NC | Fayetteville State University |
| Garrison, Chlotia | United States | SC | Winthrop University |
| Garsombke, Thomas | United States | SC | Claflin University |
| Gates, Denise | United States | CO | D&D Solutions |
| Gautier, Nancy | United States | AL | University of Mobile |
| Gifondorwa, Daniel | United States | NM | Eastern New Mexico University |
| Glickman, Leslie B. | United States | AZ | University of Phoenix |
| Goodrich, Peter | United States | RI | Providence College |
| Grant, Jim | United Arab Emirates | | American University of Sharjah |
| Greenberg, Penelope S. | United States | PA | Widener University |
| Greer, Timothy H. | United States | TN | Middle Tennessee State University |

| Reviewer | Country | State/ Region | Affiliation |
|---|---|---|---|
| Griffin, Richard | United States | TN | University of Tennessee at Martin |
| Grizzell, Brian C | United States | Online | Walden University |
| Gulledge, Dexter E. | United States | AR | University of Arkansas at Monticello |
| Gupta, Pramila | Australia | Victoria | |
| Hadani, Michael | United States | NY | Long Island University - C.W. Post Campus |
| Hadaya, Pierre | Canada | | |
| Hale, Georgia | United States | AR | University of Arkansas at Fort Smith |
| Haley, Mary Lewis | United States | TN | Cumberland University |
| Hallock, Daniel | United States | AL | University of North Alabama |
| Hanke, Steven | United States | IN | Indiana University-Purdue University |
| Haque, MD Mahbubul | United States | NY | SUNY Empire State College |
| Harper, Betty S. | United States | TN | Middle Tennessee State University |
| Harper, Brenda | United States | WV | American Public University |
| Harper, J. Phillip | United States | TN | Middle Tennessee State University |
| Harris, Kenneth J. | United States | IN | Indiana University Southeast |
| Harris, Ranida Boonthanom | United States | IN | Indiana University Southeast |
| Hashim, Gy R. | Malaysia | Selangor | Universiti Teknologi MARA |
| Hasty, Bryan | United States | OH | Air Force Institute of Technology |
| Hayrapetyan, Levon | United States | TX | Houston Baptist University |
| Hedgepeth, Oliver | United States | AK | University of Alaska Anchorage |
| Henderson, Brook | United States | CO | Colorado Technical University |
| Hicks, Joyce | United States | IN | Saint Mary's College |
| Hilary, Iwu | United States | KY | Morehead State University |
| Hills, Stacey | United States | UT | Utah State University |
| Hillyer, Jene | United States | KS | Washburn University |
| Hinton-Hudson, Veronica | United States | KY | University of Louisville |
| Hoadley, Ellen | United States | MD | Loyola College in Maryland |
| Hodgdon, Christopher D. | United States | VT | University of Vermont |
| Hollman, Kenneth W. | United States | TN | Middle Tennessee State University |
| Houghton, Joe | Ireland | Dublin | University College Dublin |
| Hu, Tao | United States | TN | King College |
| Islam, Muhammad M. | United States | WV | Concord University |
| Iwu, Hilary O. | United States | KY | Morehead State University |
| Iyengar, Jaganathan | United States | NC | North Carolina Central University |
| Iyer, Uma J. | United States | TN | Austin Peay State University |
| Jack, Kristen | United States | MI | Grand Valley State University |
| Jackson, Steven R. | United States | MS | University of Southern Mississippi |
| Jagoda, Kalinga | Canada | Alberta | Mount Royal College |
| Jennings, Alegra | United States | NY | Sullivan County Community College |
| Jerles, Joseph F. | United States | TN | Austin Peay State University |
| Johnson, Cooper | United States | MS | Delta State University |
| Johnston, Timothy C. | United States | TN | Murray State University |
| Jones, Irma S. | United States | TX | The University of Texas at Brownsville |
| Joyner, Edd R. | United States | TN | Academic Business World |
| Justice, Patricia | United States | | Montage Education Technology |
| Kaya, Halil | United States | KY | Eastern Kentucky University |
| Keller, Gary F. | United States | WI | Cardinal Stritch University |
| Kennedy, R. Bryan | United States | AL | Athens State University |

| Reviewer | Country | State/ Region | Affiliation |
|---|---|---|---|
| Kent, Tom | United States | SC | College of Charleston |
| Kephart, Pam | United States | IN | University of Saint Francis |
| Kilburn, Ashley P. | United States | TN | University of Tennessee at Martin |
| Kilburn, Brandon | United States | TN | University of Tennessee at Martin |
| Kilgore, Ron | United States | TN | University of Tennessee at Martin |
| King, David | United States | TN | Tennessee State University |
| King, Maryon F. | United States | IL | Southern Illinois University Carbondale |
| Kitous, Bernhard | France | | |
| Kluge, Annette | Switzerland | St. Gallen | University of St. Gallen |
| Korb, Leslie | United States | NJ | Georgian Court University |
| Korte, Leon | United States | SD | University of South Dakota |
| Korzaan, Melinda L. | United States | TN | Middle Tennessee State University |
| Kray, Gloria Matthews | United States | AZ | University of Phoenix |
| Kuforiji, John | United States | AL | Tuskegee University |
| Lamb, Kim | United States | OH | Stautzenberger College |
| Latif, Ehsan | Canada | British Columbia | University College of the Cariboo |
| Lee, Jong-Sung | United States | TN | Middle Tennessee State University |
| Lee, Minwoo | United States | KY | Western Kentucky University |
| Leonard, Jennifer | United States | MT | Montana State University-Billings |
| Leonard, Joe | United States | OH | Miami University |
| Leupold, Christopher R. | United States | NC | Elon University |
| Lim, Chi Lo | United States | MO | Northwest Missouri State University |
| Lin, Hong | United States | TX | University of Houston-Downtown |
| Lindstrom, Peter | Switzerland | | University of St. Gallen |
| Long, Jamye | United States | MS | Delta State University |
| Lowhorn, Greg | United States | FL | Pensacola Christian College |
| Lyons, Paul | United States | MD | Frostburg State University |
| Marquis, Gerald | United States | TN | Tennessee State University |
| Mason, David D.M. | New Zealand | | |
| Mathews, Rachel | United States | VA | Longwood University |
| Mavengere, Nicholas Blessing | Finland | | University of Tampere |
| Mayo, Cynthia R. | United States | DE | Delaware State University |
| McDonough, Darlene M. | United States | | St. Bonaventure University |
| McGowan, Richard J. | United States | IN | Butler University |
| McKechnie, Donelda S. | United Arab Emirates | | American University of Sharjah |
| McKenzie, Brian | United States | CA | California State University, East Bay |
| McManis, Bruce | United States | LA | Nicholls State University |
| McNeese, Rose | United States | MS | University of Southern Mississippi |
| McNelis, Kevin | United States | NM | New Mexico State University |
| Medina, Carmen I. Figueroa | Puerto Rico | PR | University of Puerto Rico, Mayaguez |
| Mello, Jeffrey A. | United States | FL | Barry University |
| Mello, Jim | United States | CT | University of Hartford |
| Meyer, Timothy P. | United States | WI | University of Wisconsin-Green Bay |
| Mitchell, Jennie | United States | IN | Saint Mary-of-the-Woods College |
| Mlitwa, Nhlanhla | South Africa | | |
| Mollica, Kelly | United States | TN | The University of Memphis |
| Moodie, Douglas R. | United States | GA | Kennesaw State University |
| Moore, Bradley | United States | AL | University of West Alabama |

| Reviewer | Country | State/ Region | Affiliation |
|---|---|---|---|
| Moore, Gregory A. | United States | TN | Austin Peay State University |
| Moore, Paula H. | United States | TN | University of Tennessee at Martin |
| Moraes dos Santos, André | Brazil | | Universidade do Vale do Itajaí |
| Morrison, Bree | United States | FL | Bethune-Cookman College |
| Mosley, Alisha | United States | MS | Jackson State University |
| Mosquera, Inty Saez | Cuba | Villa Clara | Universidad Central "Marta Abreu" de Las Villas |
| Motii, Brian | United States | AL | University of Montevallo |
| Mouhammed, Adil | United States | IL | University of Illinois at Springfield |
| Negbenebor, Anthony | United States | NC | Gardner-Webb University |
| Neumann, Hillar | United States | SD | Northern State University |
| Newport, Stephanie | United States | TN | Austin Peay State University |
| Nichols, Charles "Randy" | United States | KY | Mid-Continent Universsity |
| Ninassi, Susanne | United States | VA | Marymount University |
| Nixon, Judy C. | United States | TN | University of Tennessee at Chattanooga |
| Oguhebe, Festus | United States | MS | Alcorn State University |
| Okafor, Collins E. | United States | TX | Texas A&M International University |
| O'Keefe, Robert D. | United States | IL | DePaul University |
| Onwujuba-Dike, Christie | United States | IN | University of Saint Francis |
| Otero, Rafael | United States | TX | The University of Texas at Brownsville |
| Owens, Valerie | United States | SC | Anderson College |
| Packer, James | United States | AR | Henderson State University |
| Palmer, David K. | United States | NE | University of Nebraska at Kearney |
| Patton, Barba L. | United States | TX | University of Houston-Victoria |
| Payne, Alina R. | United States | CA | |
| Peña, Leticia E. | United States | WI | University of Wisconsin-La Crosse |
| Petkova, Olga | United States | CT | Central Connecticut State University |
| Petrova, Krassie | New Zealand | | Auckland University of Technology |
| Phillips, Antoinette S. | United States | LA | Southeastern Louisiana University |
| Pittarese, Tony | United States | TN | East Tennessee State University |
| Potter, Paula | United States | KY | Western Kentucky University |
| Powers, Richard | United States | KY | Eastern Kentucky University |
| Presby, Leonard | United States | NJ | William Paterson University |
| Redman, Arnold | United States | TN | University of Tennessee at Martin |
| Regimbal, Elizabeth E. | United States | WI | Cardinal Stritch University |
| Reichert, Carolyn | United States | TX | The University of Texas at Dallas |
| Ren, Louie | United States | TX | University of Houston-Victoria |
| Riley, Glenda | United States | IN | Arkansas Tech University |
| Rim, Hong | United States | PA | Shippensburg University |
| Roach, Joy | United States | KY | Murray State University |
| Robinson, Martha D. | United States | TN | The University of Memphis |
| Rood, A. Scott | United States | MI | Grand Valley State University |
| Roumi, Ebrahim | Canada | New Brunswick | University of New Brunswick |
| Roush, Melvin | United States | KS | Pittsburg State University |
| Russell-Richerzhagen, Laura | United States | AL | Faulkner University |
| Sanders, Tom J. | United States | AL | University of Montevallo |
| Sands, John | United States | WA | Western Washington University |
| Sarosa, Samiaji | Indonesia | | Atma Jaya Yogyakarta University |
| Sarwar, Chaudhary Imran | Pakistan | | Creative Researcher |

| Reviewer | Country | State/ Region | Affiliation |
|---|---|---|---|
| Schaeffer, Donna M. | United States | VA | Marymount University |
| Schechtman, Greg | United States | OH | Air Force Institute of Technology |
| Schindler, Terry | United States | IN | University of Indianapolis |
| Schmidt, Buffie | United States | GA | Augusta State University |
| Schuldt, Barbara | United States | LA | Southeastern Louisiana University |
| Selvy, Patricia | United States | KY | Bellarmine University |
| Service, Robert W. | United States | AL | Samford University |
| Shao, Chris | United States | TX | Midwestern State University |
| Shipley, Sherry | United States | IN | Trine University |
| Shores, Melanie L. | United States | AL | University of Alabama at Birmingham |
| Siegel, Philip | United States | GA | Augusta State University |
| Simpson, Eithel | United States | OK | Southwestern Oklahoma State University |
| Singh, Navin Kumar | United States | AZ | Northern Arizona University |
| Smatrakalev, Georgi | United States | FL | Florida Atlantic University |
| Smith, Allen E. | United States | FL | Florida Atlantic University |
| Smith, J.R. | United States | MS | Jackson State University |
| Smith, Nellie | United States | MS | Rust College |
| Smith, W. Robert | United States | MS | University of Southern Mississippi |
| Sobieralski, Kathleen L. | United States | MD | University of Maryland University College |
| Soheili-Mehr, Amir H. | Canada | Ontario | University of Toronto |
| Sridharan, Uma V. | United States | SC | Lander University |
| St Pierre, Armand | Canada | Alberta | Athabasca University |
| Steerey, Lorrie | United States | MT | Montana State University-Billings |
| Stokes, Len | United States | NY | Siena College |
| Stone, Karen | United States | NH | Southern New Hampshire University |
| Stover, Kristie | United States | VA | Marymount University |
| Stuart, Randy | United States | GA | Kennesaw State University |
| Stumb, Paul C. | United States | TN | Cumberland University |
| Swisshelm, Beverly Ann | United States | TN | Cumberland University |
| Talbott, Laura | United States | AL | University of Alabama at Birmingham |
| Tanguma, Jesús | United States | TX | The University of Texas-Pan American |
| Tanigawa, Utako | United States | AR | Itec International LLC |
| Terrell, Robert | United States | TN | Carson-Newman College |
| Terry, Kathleen Y. | United States | FL | Saint Leo University |
| Theodore, John D. | United States | FL | Warner University |
| Thompson, Sherwood | United States | KY | |
| Throckmorton, Bruce | United States | TN | Tennessee Technological University |
| Totten, Jeffrey | United States | LA | McNeese State University |
| Tracy, Daniel L. | United States | SD | University of South Dakota |
| Tran, Hang Thi | United States | TN | Middle Tennessee State University |
| Trebby, James P. | United States | WI | Marquette University |
| Trzcinka, Sheila Marie | United States | IN | Indiana University Northwest |
| Udemgba, A. Benedict | United States | MS | Alcorn State University |
| Udemgba, Benny | United States | MS | Alcorn State University |
| Ujah, Nacasius | United States | TX | Texas A&M International University |
| Urda, Julie | Inited States | RI | Rhode Island College |
| Valle, Matthew "Matt" | United States | NC | Elon University |
| van der Klooster, Marie Louise | Australia | Victoria | Deakin University |

| Reviewer | Country | State/ Region | Affiliation |
|---|---|---|---|
| Vehorn, Charles | United States | VA | Radford University |
| Voss, Richard Steven | United States | AL | Troy University |
| Voss, Roger Alan | United States | TX | Epicor Software Corporation |
| Wade, Keith | United States | FL | Webber International University |
| Wahid, Abu | United States | TN | Tennessee State University |
| Walter, Carla Stalling | United States | MO | Missouri Southern State University |
| Walters, Joanne | United States | WI | University of Wisconsin-Milwaukee |
| Wanbaugh, Teresa | United States | LA | Louisiana College |
| Warner, Janice | United States | | Georgian Court University |
| Wasmer, D.J. | United States | IN | Saint Mary-of-the-Woods College |
| Watson, John G. | United States | NY | St. Bonaventure University |
| Williams, Darryl | United States | TX | Walden University |
| Williams, Melissa | United States | GA | Augusta State University |
| Wilson, Antoinette | United States | WI | University of Wisconsin-Milwaukee |
| Zahaf, Mehdi | Canada | Ontario | Lakehead University |
| Zaremba, Alan | United States | MA | Northeastern University |
| Zeng, Tao | Canada | Ontario | Wilfrid Laurier University |
| Zhou, Xiyu (Thomas) | United States | AK | University of Alaska Fairbanks |
| Ziems, Wendy | United States | OH | Stautzenberger College |
| | | | |

# The JW Press Family of Academic Journals

## *Journal of Learning in Higher Education* (JLHE)

ISSN: 1936-346X (print)

Each university and accrediting body says that teaching is at the forefront of their mission. Yet the attention given to discipline oriented research speaks otherwise. Devoted to establishing a platform for showcasing learning-centered articles, JLHE encourages the submission of manuscripts from all disciplines. The top learning-centered articles presented at ABW conferences each year will be automatically published in the next issue of JLHE. JLHE is listed in Cabell's Directory of Publishing Opportunities in Educational Psychology and Administration, indexed by EBSCO, and under consideration for indexing by Scopus.

Individuals interested in submitting manuscripts directly to JLHE should review information at http://jwpress.com/JLHE/JLHE.htm.

## *Journal of Academic Administration in Higher Education* (JAAHE)

ISSN: 1936-3478 (print)

JAAHE is a journal devoted to establishing a platform for showcasing articles related to academic administration in higher education, JAAHE encourages the submission of manuscripts from all disciplines. The best articles presented at ABW conferences each year, that deal with the subject of administration of academic units, will be automatically published in the next issue of JAAHE. JAAHE is listed in Cabell's Directory of Publishing Opportunities in Educational Psychology and Administration, indexed by EBSCO, and under consideration for indexing by Scopus.

Individuals interested in submitting manuscripts directly to JAAHE should review information on their site at http://jwpress.com/JAAHE/JAAHE.htm.

## *International Journal of the Academic Business World* (IJABW)

ISSN 1942-6089 (print)
ISSN 1942-6097 (online)

IJABW is a new journal devoted to providing a venue for the distribution, discussion, and documentation of the art and science of business. A cornerstone of the philosophy that drives IJABW, is that we all can learn from the research, practices, and techniques found in disciplines other than our own. The Information Systems researcher can share with and learn from a researcher in the Finance Department or even the Psychology Department.

We actively seek the submission of manuscripts pertaining to any of the traditional areas of business (accounting, economics, finance, information systems, management, marketing, etc.) as well as any of the related disciplines. While we eagerly accept submissions in any of these disciplines, we give extra consideration to manuscripts that cross discipline boundaries or document the transfer of research findings from academe to business practice. International Journal of the Academic Business World is listed in Cabell's Directory of Publishing Opportunities in Business, indexed by EBSCO, and under consideration for indexing by Scopus.

Individuals interested in submitting manuscripts directly to IJABW should review information on their site at http://jwpress.com/IJABW/IJABW.htm

# Continuous, Real-Time Assessment of Every Student's Progress in the Flipped Higher Education Classroom Using Nearpod

**Michael D. Mattei, Ph.D.**
School of Professional Studies
Bellarmine University
Louisville, Kentucky

**Elizabeth Ennis, PT, Ed.D, PCS, ATP.**
Lansing School of Nursing and Health Sciences
Bellarmine University
Louisville, Kentucky

## ABSTRACT

*The flipped classroom has developed a solid following, but implementing it in the higher education setting, where class sizes can be quite large, still presents formidable challenges for the venturesome instructor. While recently published results tend to focus on class sizes of 25-35, this paper introduces a novel approach that effectively scales to class sizes of 50-60 and possibly more. In addition, the in-class real-time assessment of student performance, integral to this model, provides a motivation for students to complete the pre-class work thus insuring the effective use of active learning elements during class time.*

## INTRODUCTION

Today, students bring smartphones, laptops and tablets to the classroom to keep up with friends or alleviate boredom and less often to enrich learning. Some colleges and universities are now providing tablets to students, but adding technology components is not new. About 15 years ago our institution required laptops for students in all MBA programs. This sounded like a good idea, but the faculty made little effort to incorporate the technology into the educational experience and students rightfully complained about the unnecessary expense. It is important that technology is used to enhance learning and not just be a flashy new gadget. Augmenting learning with personal technology was and continues to be a difficult challenge at many schools.

Late last year, our Physical Therapy (PT) Program decided to provide iPads to all students. Even though much has changed in the last 15 years, finding a way to effectively incorporate them into the classroom continues to elude even the most dedicated, tech savvy instructors. This paper details the successful implementation of tablet technology into the classroom by an instructor determined to find a better way by combining the flipped class model, with active learning and continuous real-time assessment.

A review of the literature reveals that while there is no one size fits all path to successfully incorporating technology into a content rich higher education learning experience, there are a number of promising techniques for capitalizing on new technologies in the classroom. While the concept of the flipped or inverted classroom has been in the literature for over a decade, the popularity and recent growth in short format video on demand narrowcasts (vodcasts) has added a new tool to engage students outside the classroom.

Vodcasts are not a guarantee that students will complete the pre-class work necessary to free time for the introduction of active learning into the classroom. Some students prefer audio only podcasts, while others prefer the more traditional textbook readings and written assignments. And there will always be those students who will not to do any pre-class work no matter what techniques are used to make it more palatable.

The results reported here are significant for two reasons. First, 49 student attended the course, a very large class size in the context of the recent research on active learning. Second, the in-class assessment was at the individual level and in real-time. The near immediate feedback enabled the instructor to quickly adapt the content delivery to maximize learning outcomes.

To achieve the overall goal of integrating technology into the PT course in a meaningful way, efforts detailed in this paper were directed to:

1. Flipping the classroom experience and eliminating in-class lectures.

2. Identifying in-class activities requiring students to interact with the tablets (not just view content).
3. Devoting most of the in-class time to student analysis and discussion of patient case scenarios.
4. Pinpointing content and application problem areas for students, whether for a few students or a large percentage of the class.

## FLIPPED CLASSROOM AND ACTIVE LEARNING

The flipped or inverted classroom has been described by numerous authors, (Gannod, Burge, & Helmick, 2008; Lage, Platt, & Treglia, 2000; Steed, 2012) but generally follows the description recently detailed by the Educause Learning Initiative (Educause, 2012).

> The flipped classroom is a pedagogical model in which the typical lecture and homework elements of a course are reversed. Short video lectures are viewed by students at home before the class session, while in-class time is devoted to exercises, projects, or discussions. The video lecture is often seen as the key ingredient in the flipped approach, such lectures being either created by the instructor and posted online or selected from an online repository. While a prerecorded lecture could certainly be a podcast or other audio format, the ease with which video can be accessed and viewed today has made it so ubiquitous that the flipped model has come to be identified with it.

The primary goals of the flipped or inverted classroom are to reduce or eliminate the "passive" traditional lecture and to free class time to add active learning elements. Much has been published about the benefits of active learning, but little is reported for class sizes over 30. Working on a NSF grant, Prince synthesized research that spanned over 20 years (Prince, 2004). His article contains 57 references from a wide range of disciplines. Even though the research is persuasive, some students still prefer the traditional lecture format (Butt, 2013). For this paper, we draw upon Prince's definition of active learning, specifically:

> Active learning is generally defined as any instructional method that engages students in the learning process. In short, active learning requires students to do meaningful learning activities and think about what they are doing. While this definition could include traditional activities such as homework, in practice active learning refers to activities that are introduced into the classroom. The core elements of active learning are student activity and engagement in the learning process. Active learning is often contrasted to the traditional lecture where students passively receive information from the instructor.

For the flipped classroom to be effective there is a chain of events that must fall into place to enable active learning to be successfully deployed in the classroom. First, creating or selecting engaging and illumining pre-class materials and assignments. Second, students must be motivated to complete the pre-class material. Last, the level of knowledge gained from the pre-class material is sufficient for students to fully participate in the in-class learning elements. As a result, there are many challenges to successfully employing the flipped class model.

## OVERVIEW OF THE NEW COURSE PEDAGOGY

Vodcasts, smartphones, electronic textbooks and tablet computers such as the Apple iPad, Google Nexus, Samsung Galaxy Note and Microsoft Surface are just a few of the latest advances providing opportunities to enrich student learning with technology. Technology can be a double edged sword since students may use it more for entertainment than as a tool for learning. Over 10 years ago we heard a professor at a large, nationally ranked MBA program claim that they had banned laptops in their MBA classes since students spent more time day trading stocks than using the computers for course related work.

Our flipped class initiative began when the faculty in the Doctor of Physical Therapy (PT) program decided to provide each incoming student with an iPad. The difference between the MBA experience 15 years ago and the PT decision can be traced to some enthusiastic professors. As with many initiatives in higher education, an advocate or evangelist picks up the baton and starts running with it. In this case, one of the PT professors searched for software that would enable her to integrate technology in a meaningful way. The Nearpod application was identified as particularly well suited and a few trial class sessions were designed with it.

The course selected for the experiment was Physical Therapy Management of the Pediatric Patient (PT 640) offered during the fall 2012 semester. It is the only pediatric course in the program and is taken by the second year students in the three year program. The course met twice a week for a full two hours. Enrollment for this offering was 49 students, but can go as high as 60 students.

The instructor had taught this course for 15 years using a traditional approach. Typically, students were assigned to read about four chapters before class in a textbook with 1400 pages. The course covered most of the textbook by the end of the semester. During class, the professor lectured using PowerPoint slides to clarify content, with the hope of having time to present patient cases scenarios for students to apply the concepts. Student grades were determined by class and lab participation, quizzes and a final exam. As a result, a few students answered most of the questions posed in class. Many students were not confident or adequately prepared to participate in the more active elements and formative assessment was difficult.

The decision to provide an iPad to all PT students created the opportunity to try a new model. Based on the results of the initial trial, the Nearpod application was regarded as a good fit for the new pedagogy. In addition to providing active elements, Nearpod also provides a means for continuous assessment of student work in real-time during class. While iPads were the primary interface for both the instructor and students, laptops and smartphones can also be used by students to connect to the Nearpod session.

The next step in the revision of the course was to invert the material and move the existing PowerPoint slides to pre-class work. The PT students had become quite reliant on the slides and did not want to give them up. To further motivate the students to complete the pre-class assignments, the instructor created vodcasts by annotating the PowerPoint slides with video and audio of her lectures. The vodcasts were usually recorded in her office or at home. The vodcasts were then posted to a wiki for students to view at their convenience before class. The textbook was still required but student feedback indicated it was used more as a reference than as a primary resource.

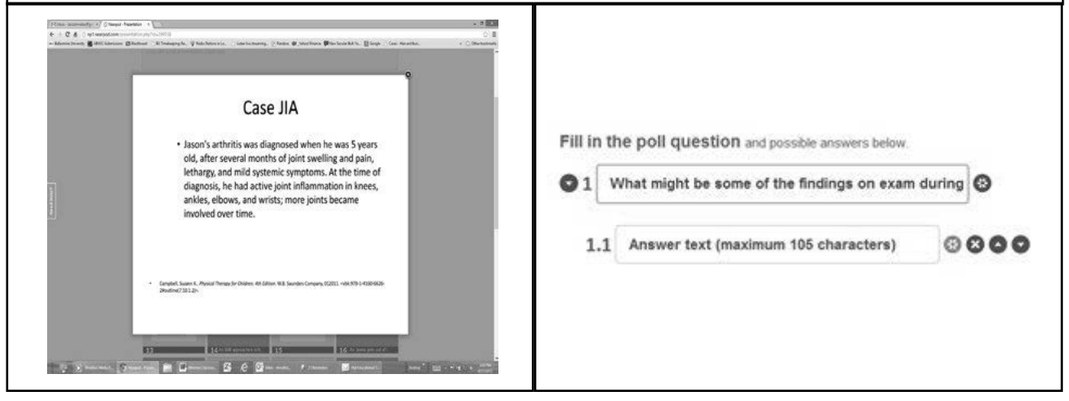
## THE NEW MODEL IN THE CLASSROOM

In the new model, as students arrive they connect to the Nearpod session. A list of each student connecting is continuously updated on the instructor's iPad. For the PT program, class attendance is mandatory. If a student decides to browse the web or read email during class, Nearpod notifies the teacher that the student has left the session. The entire Nearpod session is recorded, so the teacher can see who was and was not signed onto the session for later analysis.

The literature indicates that the typical flipped class begins with the instructor asking if there are any questions on the pre-work (Gannod et al., 2008; Lage et al., 2000). In the continuous, real-time model however, the student is presented instead with a slide briefly describing a patient "case" scenario. The case is then followed by an open-ended question or a multiple choice question requiring a student reply. An example of a case slide (left) followed by a poll slide (right) is shown in Figure 1 below. Each student's response is displayed on the teacher's iPad. The teacher is in full control of the session. Students cannot advance to the next slide until the teacher makes it viewable.

The teacher peruses the answers as they are displayed. A quick assessment is made to discuss the replies, question the class further, move to the next slide, or provide a mini-lecture explaining any misunderstood concepts. Students can only see the responses of other students if the teacher decides to share them with the full class. For multiple choice questions, a pie chart, aggregating the replies, can be shared with the whole class, if desired.

**FIGURE 1**
**A CLINICAL CASE SLIDE (LEFT) AND CORRESPONDING POLL QUESTION (RIGHT)**



If a number of students answered incorrectly, the teacher asks the class (or even specific students) why they responded as they did. This enables the teacher to bring the rest of the class into the discussion. It also provides the ability to focus the discussion a particular concept or clarify a misconception. Since the Nearpod software records all student responses, which are downloaded as a spreadsheet following the session, the instructor is able to determine if a student is struggling with the material or may not be preparing fully for the class meeting. If so, a follow-up one-on-one meeting can be scheduled to remediate the problem.

Adding the Nearpod technology into the flipped classroom provides three distinct capabilities. First, it provides a means to continuously monitor student performance in real-time instead of the customary test or class participation approach. Real-time feedback is a key element in successfully deploying this model for larger class sizes. Second, it provides five "interactive features" on the iPad that facilitate active learning in the classroom. Third, it motivates students to complete the pre-class work since students are assessed on comprehension of the material in every class. As a result, about 80% of the students came to class prepared versus the approximately 20% using the traditional passive learning approach.

## OVERVIEW OF NEARPOD

The Nearpod app was developed by Panarea Digital in Argentina primarily for iPads. While we began with the free edition, now called the silver edition, it soon became apparent that the capabilities of this edition did not meet our needs. Since many of the PT classes have 60 students, the decision was made quite early to upgrade to the school edition. There is also a gold edition for those who don't need all the features of the school edition. The following sections assume use of the school edition, but for those who want to start with the free edition, we will discuss some of the limitations and differences in the next section.

Instructors now have two options for creating a Nearpod session, a Windows or Mac computer or directly on the iPad. There are two primary components for the instructor – create and assess. The create component of the site provides the tools to create an interactive Nearpod session for use in the classroom. The assess section provides reporting for every slide in every deployed session including who viewed it and the student's response on all interactive elements.

There are eight different "features" that can be added to a session. A description of the function each performs is shown in the table below along with a column indicating its learning modality. The first item on the list is a "slide" which is actually a non-interactive feature, even though Nearpod lists it as an interactive feature. From the "active learning" perspective, the slide, slide show and video are passive elements, so only the last five are listed as active learning options.

**Table 1**
**Nearpod "Interactive" Features**

| | | |
|---|---|---|
| Slide | Upload a PDF or image file to add one or more slides to your current presentation (non-interactive feature) | Passive learning – all sessions must begin with two of these and end with one |
| Slide Show | Upload images or zip file to show pictures as a slide show | Passive learning, although allowing students to view slides at their own pace could be considered active |
| Video | Insert a video (in MP4 format and up to 3 minutes) in your presentation to play back on participant devices | Passive learning, although again, the students can start, stop, review and rewind as long as that slide is in active display mode |
| Q&A | Pose a live question, assess students and show results to the audience in real time | Active learning tool |
| Quiz | Provides a series of test questions for participants to answer at the own pace and track their progress | Active learning tool |
| Poll | Survey your audience and reveal poll results in real time | Active learning tool |
| Draw It | Ask your audience to draw on their device over a blank canvas or an image background, then select drawings to share with group | Active learning tool |
| Browse the Internet | Share web pages with users | Active learning tool |





The Quiz and Q&A slides can either be multiple choice or fill in the blank. Q&A elements, as with Polls, are graded as the students respond so the teacher can get immediate feedback on how well the class understands a particular concept. Quizzes are groupings of questions that the students go through at their own pace and are scored together at the end of the quiz. The teacher also has the option to share responses with the rest of the class.

Draw It provides some interesting features. There are two basic options, drawing on a blank screen or posting an image and allowing the students to draw on the image. The second option is particularly useful to see if the student can identify an element or elements of the image. For instance, the image might be a picture of a human skeleton. The teacher could ask the class to circle the location of the tibia. When starting with a blank screen, students can be asked to create a graph, chart or drawing.

When a Browse the Internet slide is shared with the class, students are redirected to the webpage specified in the interactive slide. Students are able to browse the site and can link to other sites if the option is provided. For instance, if the link is to Google, students can enter a search term then go to another site. We found in some cases they cannot return to the previous page. The teacher can move to the next slide however, and get the students back on track if this occurs.

## CREATING AND INITIATING A NEARPOD SESSION

Before jumping onto the website and creating an account, there are a few limitations that while understandable, might be non-starters for some. There are three Nearpod versions, silver (free edition), gold and school. The silver edition can accommodate a maximum of 30 students simultaneously connected to a teacher session. For gold, the maximum is 50 students and 100 students for the school edition. Silver only works with iOS while gold works with iOS and PC/Mac. The school edition adds Android capability to the iOS and PC/Mac operating systems.

The maximum size of a session is 20 MB (silver), 40 MB (gold) and 60 MB (school). Since the session is "published" to the cloud, the positive aspect of this limitation is the reduced download time for each student when they connect to the site. Large image and video files are limited in size to 10 MB, but there is an option to create an exclusive link to an external site. A requirement of every session is that it must have a minimum of three non-interactive slides, the first two and the last one in each session.

While using Nearpod looks quite easy, there are a number of not so obvious steps that are detailed here to help minimize first time user frustrations. A good way to get started with Nearpod is to log on to their website, create a new instructor account and create a "trial" session to become familiar with the process and features. Each session contains a sequential series of features that look like PowerPoint slides. We will continue to refer to these as features, since one of the features is called a slide. As with any class, we recommend having a clear idea of goals and learning outcomes. Next, draft a rough storyboard of the session with the appropriate feature and ordering that best suites the activities and pace of the class.

The storyboard does not need to be perfect since features can easily be added, deleted and rearranged. To start creating a session, select create then "new presentation." This is also the process for editing a previously created session. Two options are provided, "start from scratch" or "drag your PDF, image or zip file here." A previously created PowerPoint (or a Keynote) presentation can be used as the starting point for the "drag option" provided it was saved as a PDF file. For the "drag option," Nearpod will assume one slide per page in the PDF file.

When using the drag to start option, Nearpod creates a non-interactive slide for each page or image imported. A thumbnail of each slide is presented to the user and the slides can easily be rearranged as necessary. The thumbnail list only displays the actual image for the non-interactive slides. For the interactive slides, the corresponding feature icons are displayed. To view or edit an interactive slide requires double clicking on the thumbnail.

At this point, any of the eight features can be added to the presentation with the caveat that the first two and last one must be a "slide." When selecting elements, keep in mind that students can take a screenshot including ones they have drawn on (Draw-It). This can be a useful option for students who would like to keep a copy for future reference by "taking a picture" of the iPad or PC screen. This can also be a liability if the instructor plans to use the same session for another class.

Once the session is completed, it must be published. A published session is ready for use in class, but it is no longer editable. If changes need to be made to a published session, the published session is duplicated and the duplicate is edited. The instructor can delete any session that is no longer needed.

In the classroom, sessions can only be initiated by the instructor from an iPad, not a PC or Mac. After logging on

(Figure 2) and selecting a session, the teacher is presented with the session screen like the one shown in Figure 3. The five character "pin" code shown in the top left of the teacher control panel is provided to the students. The students enter the pin in the student box (Figure 2) and are connected to the session. Students using a PC/Mac or non-Apple smartphone join a session by starting a web browser and pointing it to www.nearpod.com/web.

A screen, similar to the one shown in Figure 3, provides the instructor the means to control the flow of the session. Along the bottom are thumbnails of the slides that precede and follow the large slide shown in the center of the screen. At the top left of the large slide is a label stating "preview mode." This label indicates that the slide is ready for display on student device, but it is not yet viewable by the students. When the instructor taps the "share" label on the top right, the slide is immediately displayed on all student devices. The teacher is in full control of what the students can and cannot see and when the students can view the content.

The top bar contains a number of useful items. From left to right, the first item is a count of the number of students who have connected and downloaded the session. The next item to the right is the pin code that students use to connect to the session. If the instructor touches the pin code, an email box is presented that contains the instructions on how to connect to the session, which can be sent to students. The plus sign to the far right brings up a menu that allows the teacher to log out of the app.

## INITIAL FINDINGS AND TECHNICAL ISSUES

The first few classroom meetings were quite an adjustment for students, but they adapted to the new flipped approach and real-time technology fairly quickly. The initial novelty of the iPads in the classroom wore off after a few weeks and was replaced with "this is the new norm" and not grumblings or complaints. Having the weblink, which provides access for PCs and smartphones, was useful when iPads were left at home or not fully charged. Students were able to participate on laptops or desktops available in the back of the classroom.

**FIGURE 2**
**NEARPOD SIGN-ON SCREEN FOR BOTH THE TEACHER AND STUDENTS**

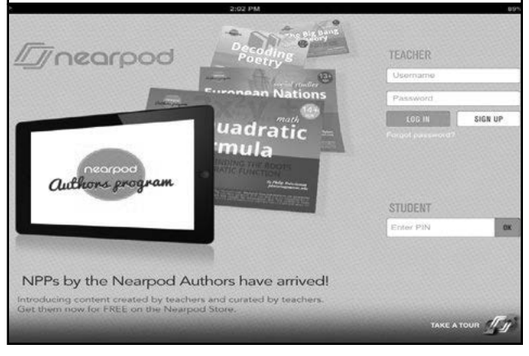



**FIGURE 3**
**INSTRUCTOR CONTROL PANEL FOR A SESSION**


The instructor observed that students seemed more motivated to complete the pre-class work. More students were using the textbook even though there were no required reading assignments. It is difficult to determine which contributed the most to student preparation, the vodcasts or the real-time in-class assessment, but about 80% of the students came to class prepared.

For this course there were three, 30 minute quizzes and an extensive final exam. Student performance on the quizzes was about the same as in the previous, traditional course model. Overall student performance on the final exam however, was much improved over courses employing the traditional model. The grade distribution was higher with considerably fewer students receiving unsatisfactory grades. Throughout the semester, fewer students fell behind or had trouble keeping up with the content. Our results are consistent with those published by Penn State (Young, 2011) stating:

> Ken's experience with ACCTG 211 is very telling. The class average has jumped from 60-70 percent of students passing prior to implementing the changes to over 80 percent in the semester with this approach. The percentage of students earning As has increased from 12 percent to 26 percent in a single semester.

One of the more remarkable aspects of this new model is that it was effective for a rather large class of 49 students. We cannot predict the upper limit on class size, but we are comfortable that it will be able to effectively handle class sizes up 60.

From a technical perspective, the most common problems were log on frustrations and some sessions freezing on a few iPads. It became apparent very quickly that the wireless coverage in the classroom was not adequate to simultaneously deliver the session to 50 iPads (49 students and one teacher), in a reasonable amount of time. The weak wireless coverage appeared to account for some of the iPads freezing. The IT department quickly installed more wireless coverage and that growing pain was alleviated. We strongly recommend having the classroom wireless coverage analyzed before attempting to implement Nearpod.

One further technical note regarding Nearpod is that it is not Internet Explorer (IE) friendly. In fact their website emphasizes the use of Chrome, Firefox or Safari for satisfactory results. There is a Chrome app available for students connecting with smartphones or Windows PCs. Having students download a browser should be a pre-class assignment since it would demand a lot of bandwidth if attempted during class.

Other than the items mentioned above, we are not anticipating any changes to the pedagogy for next semester. Integrating Nearpod did not add significantly to the prep time for a flipped class, but appears to substantially improve overall student preparation for class activities and performance on the comprehensive exam.

Future research will center on applying this new model on class sizes closer to 100, the current Nearpod limit. In addition, we plan to incorporate recent research (Chen & Sager, 2011; Njoroge, Norman, Reed, & Suh, 2012; Wergin, Tracy, & Dykstra, 2011), to better understand why quiz performance did not show much change while overall student performance on the final exam was significant and consistent with the Penn State findings.

## REFERENCES


Butt, A. (2013). Student Views on the Use of Lecture Time and their Experience with a Flipped Classroom Approach. *SSRN Working Paper Series*.

Chen, F., & Sager, J. (2011). Effects of Tablet PC Use in the Classroom on Teaching and Learning Processes. *Journal of Learning in Higher Education, 7*(2).

Educause. (2012). Seven Things You Should Know About Flipped Classrooms. *www.educause.edu/library/resources/7-things-you-should-know-about-flipped-classrooms.* Retrieved April 2, 2013.

Gannod, G. C., Burge, J. E., & Helmick, M. T. (2007). Using the Inverted Classroom to Teach Software Engineering. *http://sc.lib.muohio.edu/handle/2374.MIA/206.* Retrieved April 12, 2013.

Lage, M. J., Platt, G. J., & Treglia, M. (2000). Inverting the classroom: A gateway to creating an inclusive learning environment. *Journal of Economic Education, 31*(1).

Njoroge, J., Norman, A., Reed, D., & Suh, I. (2012). Identifying Facets of Technology Satisfaction: Measure Development and Application. *Journal of Learning in Higher Education, 8*(2).

Prince, M. (2004). Does Active Learning Work? A Review of the Research. *Journal of Engineering Education, 93*(3), 223-231. Steed, A. (2012). The flipped classroom. *Teaching Business & Economics, 16*(3), 9-11.

Wergin, R., Tracy, D., & Dykstra, D. (2011). An Investigation into Student Personality and Their Attitudes Toward Laptop Use in the Business School Classroom. *Journal of Learning in Higher Education, 7*(2).

Young, B. (2011). 7 Things You Need To Know About Flipping the Classroom. *http://tlt.its.psu.edu/files/2011/09/2011-Flipping-the-Classroom.pdf.* Retrieved April 12, 2013.

This is intentionally blank.

# Providing Deep Learning through Active Engagement of Adult Learners in Blended Courses

**Dr. Darlene McDonough**
Associate Professor
Educational Leadership, School of Education
St. Bonaventure University
St. Bonaventure, New York

## ABSTRACT

*Malcolm Knowles (2011) indicates that adult learners are most likely to be actively engaged in learning when they are given some choice and control over the learning process. When the curriculum relates to the adult learner's interests, is individualized, and authentic; the adult learner becomes actively engaged in the process by making a 'psychological investment' in learning. Teaching a blended course presents certain challenges for the instructor when creating lessons to actively engage adult learners. This paper discusses how active engagement is defined and determined, barriers that impact adult learners attempting to actively engage in learning, and various strategies to actively engage adult learners that directly align to the characteristics of the adult learning process, in a blended course.*

## INTRODUCTION

Changes in adult learner active engagement have occurred due to the instructional delivery of blended courses. The way online adult learners engage in their studies has taken on a new dimension due to the widespread uptake of learning management systems by universities and colleges. This change in learning environments has created changes in ways that adult learners are engaging with instructors, course resources, and peers. Distance learning via learning management systems can occur with limited face-to-face contact between adult learners and instructors (Douglas & Alemanne, 2007). Traditional ways used in face to face classes for actively engaging adult learners to facilitate deep learning need to be adapted and aligned to the adult learning process for use in blended courses.

## MALCOLM KNOWLES PRINCIPLES OF ADULT LEARNING

Malcolm Knowles (2011) views adult learning as problem-based and collaborative not didactic. Adults are self-directed and autonomous and determine individual learning goals. As self-directed learners, they want to determine the knowledge that will be learned, the projects in which they will participate, and how they will demonstrate the knowledge gained. Adults who are self-directed take the initiative, with or without the help of others, in determining their learning needs, obtaining human and material resources for learning, choosing and implementing appropriate learning strategies, and assessing learning outcomes. Knowles argues that self-directed learning is closely related to the natural process of psychological development-where adults take on increased responsibility for their own lives and their own learning. Self-directed learners are proactive, learn more things and learn better, than do learners who are reactive learners and are passively engaged in the learning. They enter into learning with greater motivation and purpose. As a result, new knowledge is retained better and longer, as well as applied with greater ease to new situations. Adult learners have a variety of life experiences and prior knowledge from work, school, family, and community involvements. Respect for adult learners needs to be demonstrated during the learning process, in particular acknowledging the wealth of knowledge and experiences they bring to the learning situation. Adult learners need to be treated as equals in the learning situation and be given opportunities to communicate freely. Connections need to be made by the learner between prior knowledge and the new knowledge. These connections help the adult learner see the value of the new knowledge to real life situations and enable the learner to apply the new knowledge to meaningful circumstances. Adult learners are goal oriented. According to the Adult Education Center (2005), most adults engage in a learning experience to create a change in a skill, behavior, current knowledge, or attitude. Learning needs to focus on tasks involving a component of the adult learner's social roles. Adult learners are motivated to knowledge that can have immediate application to their real life. The adult learner needs to have a reason for the learning. Application to the learner's work or other responsibilities, help the adult learner see value in gaining the new knowledge. Adult learners are practical and focus on the parts of the new

knowledge that are most useful to them; either in their work or other areas of their life. What this means is that adult learners what to be actively engaged in the learning process and need to have an environment that supports this active engagement.

## MOTIVATION IN ADULT LEARNERS

Motivation in adult learners is both extrinsic and intrinsic. The factors that impact the motivation of adult learners include:

1. *Needing to make new friendships and develop social relationships with new associates.*
2. Meeting the external expectation or recommendation to participate in new learning from someone in authority.
3. Personal advancement such as achieving a job promotion, obtaining advanced status in employment, or staying competitive.
4. Obtaining or maintaining a license/certification.
5. Maintaining skills, developing skills, or adapting to changes within a job
6. Obtaining new knowledge to assist the community, becoming better prepared to participate in community work or serve mankind.
7. Escaping boredom or acquiring relief from the ordinary daily routines of work or home with a contrast of other more exciting opportunities.
8. Learning for the sake of gaining new knowledge, obtaining knowledge for its own reward and appeasing an inquisitive mind.

Retention is an important part of the adult learning process. It is directly impacted by the amount of practice and use during the learning process. What this means is that adult learners need to be actively engaged in learning, have predetermined motivation for engaging in the learning, and need a learning environment that supports this active engagement and motivation.

## DEFINING ACTIVE ENGAGEMENT FOR ADULT LEARNERS

Active engagement represents both the time and energy adult learners invest in educationally purposeful activities and the effort institutions devote to using effective educational practices. (Kuh, et al 2008) According to Barkley, (2010), "Student engagement is the product of motivation and active learning. It is a product rather than a sum because it will not occur if either element is missing." The extent to which adult learners are motivated and committed to learning, have a sense of belonging and accomplishment, and have relationships with adults, peers, and family that support learning will impact the active engagement of adult learners. Adult learners need to experience certain conditions for deep learning to take place through active engagement in the learning process (Barkley, 2010). A sense of a learning community needs to be created by the instructor through the promotion of interactions between the instructor and the adult learner as well as interactions between the peers and the adult learner throughout the course. A learning community is created when the instructor is seen as helpful and approachable while listening to the adult learner and not talking to them in a derogatory way. Instructors should provide a psychologically safe and inviting learning environment (Learning First Alliance, 2001). Instructors of adult learners should organize the classroom environment as communities that foster caring relationships between all members of the class and treat all members fairly. Adult learners are motivated to learn when they believe that their instructors care about their education and about them personally. Therefore, they must have opportunities to share their ideas and perspectives, and instructors must demonstrate to them that their perspectives are valued (McCombs, n.d.). Instructors should create a sense of community and common purpose; at the same time, they should recognize the diversity and individuality of each member of the class community. An atmosphere in which civility, order, and decorum are the norms and antisocial behavior such as bullying, intimidation, and taunting are clearly unacceptable. By establishing this atmosphere, the instructor helps to create a safe environment. Instructors set a classroom climate where learners feel free to experiment, discuss, question, and take risks.

Blended courses are online and require adult learners and instructors to get together at least once (or sometimes several times) in person, by conference call, or through closed-circuit television links. They can be asynchronous or synchronous. In an asynchronous course, communications and activities take place outside of real time. There is a time lag between when the message is sent and a replied is given. Messages can be added at any time and read at the recipient's leisure. Messages are not read as they are being created and as much time can be taken as needed to craft a respond to the post. Asynchronous activities take place whenever adult learners have the time to complete them. Messages can be read and responded to at any place there is internet access. For example, viewing videos linked to the course site, reading a textbook, and writing a paper are all asynchronous activities. In contrast, synchronous, or





real-time communication takes place like a conversation. Some courses use only writing-based tools to communicate as a result, the only synchronous communication possible is a chat session. Everyone gets online in the same chat room and types questions, comments, and responses in real time. Synchronous activities may include chat sessions, whiteboard drawings, and other group interactive work. Some courses involve multimedia tools, and a synchronous communication might involve audio or video feeds to the computer.

There are some key advantages to asynchronous collaboration tools. They enable flexibility. Participants can receive the information when it's most convenient for them as well as any place there is internet access. There's less pressure to act on the information or immediately respond in some way. Adult learners have time to digest the information and put it in the proper context and perspective. Another advantage is that some forms of asynchronous collaboration, such as email, are ubiquitous. One of the advantages of synchronous collaboration is its immediacy. Information can be sent and received right away. Synchronous collaboration, in general, is more interactive than asynchronous.

The drawbacks of asynchronous collaboration are that they can lack a sense of immediacy and drama. There's less immediate interaction. Sometimes people have to wait hours, days, and even weeks to get a response to a message or feedback on a shared document. The downside of synchronous collaboration is that not everyone uses it. Although instant messaging, chat, and other such tools are becoming more common, they're still not as ubiquitous as technology such as email. Another drawback is that synchronous collaboration is not as flexible as asynchronous. All the parties involved must be ready and willing to collaborate at a given moment-or the session doesn't work as well. Also, not everyone does well with this kind of collaboration, particularly people who like to think over what they want to communicate (Allen, I. E. & Seaman, J. 2006). Both asynchronous and synchronous courses can help to create a safe, risk free learning community to actively engage the adult learning in the learning process.

The instructor needs to help adult learners work to their optimal level of challenge. This goal is reached by the instructor using strategies that assess prior knowledge to determine where to begin the instruction and help the adult learners make connections between known and new knowledge, teach metacognitive skills, and empower the adult learners as partners in the learning process. Instructors should expect active engagement and can share this expectation by inviting adult learners to suggest activities that will help them achieve their individual learning goals as well as choosing learning materials and resources.

## ANTICIPATION GUIDE

On strategy that can be used to activate the adult learner's prior knowledge and set a purpose for reading is the anticipation guide. The instructor chooses 5-7 major concepts from the reading. The concepts are put into statements which are read by the adult learners who decide whether they agree or disagree with each statement. During the reading the learner indicates after the statement whether they continue to agree or disagree with the statement as previously indicated or if evidence from the reading leads them to change their understanding. The adult learners list where evidence can be found in the reading to support the after reading decisions. For each statement, each learner shares what was indicated for each statement before reading and after reading with evidence from the text for support (Duffelmeyer, 1994).

## LEARNER-CENTERED APPROACHES

Adult learners are more actively engage in learning when they determine the learning to be meaningful to their lives. Instructors who help adult learners obtain deeper understanding of their values and beliefs as well as an increase self-understanding in relation to others and the larger world help the adult learners become more actively engaged in the learning process. Promoting the understanding of the purpose and the importance of course activities will help the adult learner make connections between the learning and their respective lives. Social interactions, discussions, and hands-on activities increase the active engagement of adult learners. They become more actively engaged in learning when there is increased the time and effort in these purposeful activities. Interactions with the instructor and the adult learner as well as interactions between the adult learner and their peers regarding important issues for extended periods of time also increase adult learner active engagement. Instructors using a learner-centered approach encourage adult learners to construct their own meaning of the new knowledge. They structure assignments so each adult learner finds some value in the assignment, motivation to complete the assignment, and actively engage in the learning process. Strategies are used so the course becomes an uncovering of the content with application to real life situations. To accomplish this, the instructor articulates objectives that can be applied to various topics. Diverse experiences using appropriate instructional strategies that promote new ways of thinking and responding to new information help adult learners more actively engaged in the learning process (Barkley, 2010).

Whenever possible, instruction should be tied to topics and problems that naturally interest adult learners (Ormrond, 1995; Stipek, 1996). Instructors should make connections between adult learners' prior knowledge and experiences and illustrate the connection between the curriculum and the real world (Bransford, Brown, & Cocking, 1999). Rather than emphasizing that adult students learn material because it will be on the test, instructors should underscore the relevance of instruction to the adult students' personal lives and future aspirations (Ormond, 1995; Sheldon & Biddle, 1998). Motivational researchers insist that curriculum and instruction should be culturally relevant to promote adult learner engagement where all voices in the adult learning community are represented and valued in the curriculum and adult learners do not feel silenced in the instructional activities" (Kordalewski, 1999). Instructors can help adult learners be actively engaged in the learning process by providing instructional activities that 1) require the transfer of new knowledge to other content areas or disciplines, 2) help move content from short-term memory to long-term memory, 3) assist the learner in making an emotional connection to the new knowledge and 4) go beyond the text, so that the new learning takes on the human dimension.

## FOUR SQUARE READING-RECIPROCAL READING

A during reading strategy that will provide active engagement for the adult learner is Four Square Reading. In a blended course, this strategy can take place over five weeks. The instructor divides the learners into four groups of four and the reading into four parts. For each of the four weeks, each learner rotates through each of the four roles: the summarizers summarize the content; the connectors make connections from the readings to self, text, and the world; visualizers make visual connections to their understanding of the text; and the predictors/questioners make predictions about the text before reading, ask questions during the reading and after the reading. At the end of each week, each group will discuss through online threaded conversation, the information that was gained. After consensus is reached, an online group summary is submitted to the instructor. By the end of the four weeks, each group member will have taken on the responsibilities of each of the roles and all four sections of the reading will have been completed. For the fifth week, an individual final summary of the four sections will be submitted online to the instructor. Other forms of assessment could be completed on the fifth week including applying the concepts to a case study or a simulation (CONDOR at CCNY).

## MAXIMIZING ACTIVE ENGAGEMENT

Research on adult learning, (Knowles, 2011), indicates that adults are most likely to be engaged in learning when they are given some choice and control over their learning process and when the curriculum is individualized, authentic, and related to adult learners' interests. They make a psychological investment in learning. Pride is taken not simply in learning the formal indicators of success, but in understanding the material and applying it in their lives. According to this definition, an engaged student is one who is intrinsically motivated to learn. This motivation is from a desire for competence and understanding, or simply from a love of learning, rather than a desire for a good grade or an instructor's approval. Actively engaged adult learners are more likely to approach tasks eagerly and to persist in the face of difficulty. They are also more likely to seek opportunities for learning when the extrinsic awards are not available This happens because intrinsically-motivated adults are more wholly engaged and absorbed in their activities and bring more of their prior knowledge and integrative capacities to bear in their pursuit of new understanding and mastery. Instructors who want adult learners to understand what they learn in school and apply the knowledge and skills to real-life situations, provide engaging learning opportunities that go beyond restating basic facts on multiple-choice or short-answer exams. Adult learners are driven to engage in authentic, personally meaningful, and relevant work. According to motivational researchers, tasks that have personal meaning for adult learners are more likely to promote engagement (McCombs, 2002.; Stipek, 1996). As Bransford, Brown, and Cocking (1999) indicate, adult learners are more motivated when they can see the usefulness of what they are learning. Similarly, adult learners are driven to exercise control over their own activities, and are more likely to be motivated to learn when they believe that their actions are internally initiated and when they have opportunities to regulate their own actions and make choices (Alderman, 1999; McCombs, 2002.; Sheldon & Biddle, 1998). Adult learners who do not believe that they have control or choice are less likely to expend the effort necessary to learn. Researchers agree that schools that maximize student engagement should have the following characteristics:

1. Each adult learner should have a curriculum at an appropriate level of difficulty.
2. Instructors must have high but achievable expectations for all students (Alderman, 1999; Bransford, Brown, & Cocking, 1999; Learning First Alliance, 2001).
3. Instructional tasks should be of "intermediate difficulty"; they should be tasks that the adult learner can complete with some effort to help the adult learner develop feelings of increasing competence and pride (Stipek, 1996).
4. Adult learners should also be provided with clear, frequent, and constructive feedback so that they are able to see growth in their capacities and skills (McCombs, 2002.; Stipek, 1996; Wiggins & McTighe, 1998).

All adult learners need to have opportunities to participate in the decision-making processes to regulate and direct their own learning. Instructors should encourage adult learners to take responsibility for regulating their own learning and for being self-determined and autonomous learners when choices are given to them. The evidence is clear that student motivation, learning, and performance are enhanced when adult learners make these decisions (McCombs, 2002.). Researchers emphasize that the choices adult learners are given must be authentic and not token measures intended to pacify.

## METHODS OF ASSESSMENT

Assessment of learning provides important feedback to the adult learner. There are several authentic ways to assess the knowledge gained including: applying the knowledge to multiple scenarios, asking students to generalize the information, and relating the learning to diverse scenarios. Frequent and, at times, immediate feedback specific about their performance helps adult learners maintain active engagement. Adult learners value feedback focused on the content, is informational, is performance based and behavior specific. Prompt feedback given in private is important to adult learners. They need to understand what quality work is and how it will be assessed. Instructors provide this understanding by using rubrics for grading procedures or detailed explanations as to what is expected in each assessment. When instructors provide this information, adult learners will be able to also describe the criteria by which their work will be assessed.

## RAFT POST READING ACTIVITY

Adult learners will actively engage in the concepts being presented if they know a RAFT writing assignment will be completed. In this post reading activity, the instructor chooses a text that contains concepts that provide opportunities to share the information to an audience. After reading, the adult learner is directed to choose one or more important concepts from the reading to share with a particular audience who would benefit from this information. The adult learner will also choose who will be the writer of the communication, the format of the writing, and the topic. RAFT assignments encourage adult learners to uncover their own voices and formats for presenting their ideas about content information they are studying. Adult learners respond to writing prompts that require them to think about various perspectives such as:

- Role of the Writer: Who are you as the writer? The President? A board member?
- Audience: To whom are you writing? A senator? A teacher? A company?
- Format: In what format are you writing? An editorial? A newspaper? A memo?
- Topic: What are you writing about?

The writing is shared on line as part of the weekly threaded conversation. Students can be assigned to respond to one or more of their peer's written communications. Instructors can divide the adult learners into two groups- one group is the writer and the other group is the audience and responder to the written communication. Then roles can be reversed in another week's assignment where another RAFT would be assigned (Santa, Havens, & Valdes, 2004).

## BARRIERS TO ACTIVE ENGAGEMENT OF ADULT LEARNERS

Adult learners have barriers to their motivation to learn. They have many personal and work responsibilities that must be balanced with the demands of learning. Lack of time, financial resources, confidence, or information regarding opportunities to learn, scheduling difficulties, as well as child care and transportation issues can impact the adult learners' motivation to learn. Past educational or work experiences may be barriers to learning. This occurs if the new knowledge is in conflict with past education or life experiences. This conflict needs to be addressed before the learners can actively engage in the learning (Knowles, 2011).

## WAYS TO MEASURE ENGAGEMENT

In blended courses, the instructor has to use different methods to measure the active engagement of adult learners. When building a learning community in a blended course, adult learners need individual attention. Feeling comfortable in seeking help and asking questions using technology is important (i.e. Learning Management System and email). An actively engaged adult learner can describe the purpose of the lesson to show clarity of learning. This is more comprehensive than describing the activ-

ity and shows a greater depth of engagement in the learning. The activities that the actively engaged adult learner is asked to do are found to be interesting, challenging, and a connected to real life situations. The work is viewed as meaningful. Actively engaged adult learners participate in rigorous thinking by working on complex problems, creating original solutions, and reflecting on their learning and the quality of their work. Adult learners who are actively engaged are performance oriented. They understand what quality work is and how it will be assessed. The criteria by which their work will be evaluated can be described by the adult learner (Douglas & Alemanne, 2007).

## CONCLUSION

Active engagement by adult learners is critical for learning to take place. Understanding the principles of adult learning helps the instructor to develop learning opportunities that facilitate active engagement and ultimately successful acquisition of new knowledge by adult learners. Adult learners will be motivated to engage in educationally purposeful activities that contribute directly to a variety of desired outcomes determined by the learner. Active engagement appears to be comprised of focused and collaborative learning, involvement in challenging academic activities, regular interactions with instructors and peers, and believing they are respected and supported by the university learning community. Active engagement is particularly critical in online blended courses. For adult learners to be academically successful, university instructors in the 21st century need to utilize the tenets of adult learning theory and strategies for active engagement in blended course preparation.

## BIBLIOGRAPHY


Alderman, M. K. (1999). *Motivation for achievement: Possibilities for teaching and learning. Mahwah, NJ: Lawrence Erlbaum.*

Allen, I. E. and Seaman, J.(2006), Making the Grade: Online Education in the United States, Needham, Mass.: The Sloan Consortium.

Barkley, E. (2010). Student engagement techniques: A handbook for college faculty. San Francisco, CA: Jossey-Bass.

Beer, C. Clark, K., & Jones, D. (2010). Indicators of engagement. In C.H. Steel, M.J. Keppell, P. Gerbic & S. Housego (Eds.), *Curriculum, technology & transformation for an unknown future. Proceedings ascilite Sydney 2010 (pp.75-86). Retrieved from:* http://ascilite.org.au/conferences/sydney10/procs/Beer-full.pdf

Beer, C., Jones, D., & Clark, K. (2009). *The indicators project identifying effective learning: adoption, activity, grades and external factors*. Paper presented at the ASCILITE 2009. http://indicatorsproject.wordpress.com/2009/10/09/the-indicators-project-identifying-effective-learning-adoption-activity-grades-and-external-factors/

Blin, F., & Muro, M. (2007). Why hasn't technology disrupted academics' teaching practices? Understanding resistance to change through the lens of activity theory. *Computers and Education, 50*(2008), 15.

Bransford, J., Brown, A., & Cocking, A. (Eds.). (1999). *How people learn: Brain, mind, experience, and school (Report of the National Research Council). Washington, DC: National Academy Press.*

*Brooks, R. B. (1999). Creating a positive school climate: Strategies for fostering self-esteem, motivation, and resilience. In J. Cohen (Ed.), Educating minds and hearts: Social emotional learning and the passage into adolescence. Alexandria, VA: Association for Supervision and Curriculum Development.*

Bulger, M. E., Mayer, R. E., Almeroth, K. C., & Blau, S. D. (2008). Measuring Learner Engagement in Computer-Equipped College Classrooms. *Journal of Educational Multimedia and Hypermedia, 17*(2), 129-143.

Brookfield, S. & Preskill, S. (2005). Discussion as a Way of Teaching: Tools and Techniques for Democratic Classrooms. San Francisco, CA: Jossey-Bass.

Coates, H. (2006). Student Engagement in Campus-based and Online Education http://www.cqu.eblib.com.ezproxy.cqu.edu.au/EBLWeb/patron/

Coates, H. (2007). A model of online and general campus-based student engagement. *Assessment & Evaluation in Higher Education, 32*(2), 121-141.

Douglas, I. (2008, 14 December 2008). *Measuring Participation in Internet Supported Courses.* Paper presented at the 2008 International Conference on Computer Science and Software Engineering, Wuhan, China.

Douglas, I., & Alemanne, N. D. (2007). *Measuring Student Participation and Effort.* Paper presented at the International Conference on Cognition and Exploratory Learning in Digital Age, Algarve, Portugal.

Duffelmeyer, F. (1994) Effective Anticipation Guide statements for Learning from Expository Prose, *Journal of Reading*, Vol. 37, No. 6 (Mar., 1994), pp. 452-457







Dutton, J., Durron, M., & Perry, J. (2002). How Do Online Students Differ From Lecture Students? [Journal]. *Journal for Asynchronous Learning Networks, 6*(1), 20.

Edmunds, J. (2010). Defining Rigor [PowerPoint slides]. Retrieved from the SERVE center website at: http://www.serve.org/uploads/files/Defining%20Rigor.pdf

Jennings, D. (2005). Virtually Effective: The Measure of a Learning Environment. *Emerging Issues in the Practice of University Learning and Teaching,* (2005). http://www.aishe.org/readings/2005-1/jennings-Virtually_Effective.html

Fink, L.D. (2003). *Creating Significant Learning Experiences: An Integrated Approach to Designing College Courses*. San Francisco: Jossey-Bass.

Goodlad, J. (1984). *A place called school. New York: McGraw Hill.*

Graham, S., & Weiner, B. (1996). Theories and principles of motivation. In D. Berliner & R. C. Calfee (Eds.), Handbook of educational psychology (pp. 62–84). New York: Macmillan.

Hootstein, E. W. (1994, March/April). Motivating students to learn. The Clearinghouse, 67(4), 213–217.

*Jones, R.D. (2008). Student Engagement – Creating a Culture of Academic Achievement. From the International Center for Leadership in Education.*

Knowles, M. S., Holton, E. F. & Swanson, R. A. (2011). The Adult Learner: the definitive classic in adult education and human resource development. (7th ed.). New York: Elsevier Inc.

Kordalewski, J. (1999). Incorporating student voice into teaching practice. *ERIC Digest. Washington, DC: ERIC Clearinghouse on Teaching and Teacher Education. (ERIC Document Reproduction Service No. ED44049)*

Krause, K.-L. (2005, 21-22 September 2005.). *Understanding and promoting student engagement in university learning communities.* Paper presented at the Sharing Townsville.

Kuh, G. D. (2001). Assessing What Really Matters to Student Learning. Inside the national survey of student engagement. Retrieved from: http://cpr.iub.edu/uploads/Assessing_What_Really_Matters_To_Student_Learning_(Kuh, %202001).pdf

Kuh, G. (2008). *High-Impact Educational Practices*. Washington DC: Association of American Colleges and Universities.

Learning First Alliance. (2001, November). *Every child learning: Safe and supportive schools. Alexandria, VA: Author.*

Malikowski, S. R., Thompson, M. E., & Theis, J. G. (2007). A model for research into course management systems: bridging technology and learning theory. [Research paper]. Journal of educational computing research, 36(2) (2007), 24.

McAlpine, L., & Weston, C. (2004). Reflection: issues related to improving professors' teaching and students' learning. Instructional Science, 28(5), 363-385.

McCombs, B. L.(2002), Understanding the keys to motivation to learn. Aurora, CO: Mid-continent Research for Education and Learning. (6/20/2002). Retrieved from http://www.mcrel.org/products/noteworthy/noteworthy/barbaram.asp 6/20/2002

Meece, J., & McColskey, W. (1997). Improving student motivation: A guide for teachers and school improvement teams. Tallahassee, FL: Southeastern Regional Vision for Education (SERVE).

Ormrond, J. E. (1995). Educational psychology: Principles and applications. Englewood Cliffs, NJ: Merrill.

Paul, R. & Elder. L. The Miniature Guide to Critical Thinking Concepts and Tools, Foundation for Critical Thinking, Dillon Beach, CA, 2009, 5th Ed.

Prince, M. (2004). Does Active Learning Work? A Review of the Research. *Journal of Engineering Education, 93(3), 8.*

Reciprocal Reading Strategies–CONDOR at CCNY Retrieved from: condor.admin.ccny.cuny.edu/~group3/Robert%2520Villetto/...

Robinson, S. Finding the Experience in Learning: Creating Space for the Ebb and Flow of Student Engagement *CASS Connection: the Official Magazine for the College of Alberta Superintendents, Spring 2011*

*Santa, C., Havens, L., & Valdes, B. (2004). Project CRISS: Creating Independence through Student-owned Strategies. Dubuque, IA: Kendall Hunt.*

*Schlechty, P. C. (2002). Working on the work: An action plan for teachers, principals, and superintendents. San Francisco: Jossey-Bass.*

Stipek, D. J. (1996). Motivation and instruction. In D. C. Berliner & R. C. Calfee (Eds.), Handbook of educational psychology (pp. 85–113). New York: MacMillan.

Swan, K., Garrison, D. R. & Richardson, J. C. (2009). A constructivist approach to online learning: the Com-

munity of Inquiry framework. In Payne, C. R. (Ed.) Information Technology and Constructivism in Higher Education: Progressive Learning Frameworks. Hershey, PA: IGI Global, 43-57.

Turkle, S. (2011). *Alone Together: Why We Expect More from Technology and Less from Each Other.* New York: Basic Books.

Voke, H., (2002), Motivating students to learn. *ASCD Infobrief, 2*(28). Retrieved from: http://www.ascd.org/publications/newsletters/policy-priorities/feb02/num28/Motivating Students-to-Learn.aspx

University of Minnesota. (2009). Why Moodle? http://www1.umn.edu/moodle/instructor/why.html

Vrasidas, C., & McIsaac, M. S. (1999). Factors influencing interaction in an online course. *American Journal of Distance Education, 13(3), 22-36.*

*West, R. E., Waddoups, G., & Graham, C. R. (2006). Understanding the experiences of instructors as they adopt a course management system. Educational Technology Research and Development, 55(1), 1-26.*

Wiggins, G. & McTighe, J. (2001) Understanding by Design. Upper Saddle River, NJ: Prentice Hall.

Yair, G. (2000). Reforming motivation: How the structure of instruction affects students' learning experiences. *British Educational Journal, 26(2), 191–210.*

# What makes a MOOC?
# Massive Open Online Courses (MOOCs) Compared to Mainstream Online University Courses

**Timothy C. Johnston**
Professor of Marketing
Bauernfeind College of Business
Murray State University
Murray, Kentucky

## ABSTRACT

*A Massive Open Online Course (MOOC) is a model for delivering learning content online to any person who wants to take a course, with no limit on attendance. The MOOC industry is growing rapidly, fueled by students interested in free higher-education learning, and the universities and venture capitalists willing to fund the courses. This paper compares the MOOC format with the format of a Mainstream Online University Course (MOUC). Comparing MOOCs with MOUCs will help those readers familiar with online courses to understand the unique characteristics of MOOCs, and their implications for learning. MOOCs are compared to MOUCs on the following dimensions: Course enrollment; Openness; Price; Content media; Discussion forums; Assessment; and Instructor contact. MOOCs are already effective substitutes for learning that is not for academic credit. Several experiments are under way that may result in MOOCs contributing to for-credit courses or delivering them entirely.*

## INTRODUCTION

A Massive Open Online Course (MOOC) is a model for delivering learning content online to any person who wants to take a course, with no limit on attendance (Educause, 2013). The MOOC format is evolving and growing rapidly. The MOOC industry is dominated by three MOOC content platforms; Coursera, edX, and Udacity, and is characterized by a growing number of sponsoring universities, instructors and courses (Pappano, 2012).

This paper focuses on Coursera, founded in 2012 by two Stanford University professors. By early 2013 Coursera presented 313 courses from 62 institutions, including 16 international institutions (Empson, 2013). Coursera announced its 3 millionth user on March 13, 2013 (Coursera, 2013a).

According to Coursera (2013b): "We are a social entrepreneurship company that partners with the top universities in the world to offer courses online for anyone to take, for free. We envision a future where the top universities are educating not only thousands of students, but millions. Our technology enables the best professors to teach tens or hundreds of thousands of students." Coursera is an online platform with which students can participate in online courses by faculty from select universities.

This paper compares the MOOC format with the format of a Mainstream Online University Course (MOUC), a term invented for this paper. Comparing MOOCs with MOUCs will help those readers familiar with online courses to understand the unique characteristics of MOOCs, and their implications for learning.

A Mainstream Online University Course (MOUC) is presented online, by an accredited university, and for academic credit. (Accredited means by a US Department of Education recognized accreditation body.) By "mainstream" we mean the online version of what the bulk of higher education, leading to academic degrees, looks like.

The author has completed five MOOCs on business (U of Pennsylvania; U of California-Irvine), history and physics (U of Virginia), and science (Duke) via Coursera. The author has also taught numerous Mainstream Online University Courses at multiple universities, as well as face-to-face courses, as a university professor (over 6000 students in over 280 courses).

## MOOCS VERSUS MOUCS

There is a wide variety of Mainstream Online Courses as well as a growing variety of MOOCs. This paper will focus on the modal defining characteristics of each format. Table 1 summarizes the contrasting characteristics of the two formats.

**Table 1**
**Comparison of Massive Open Online Courses (MOOCs) with Mainstream Online University Courses (MOUCs)**

| | Massive Online Open Course (Coursera) | Mainstream Online University Course |
|---|---|---|
| Course enrollment | Thousands | Tens (to hundreds) |
| Openness | Required: Email address | Required: University enrollment (selective admission); course enrollment (on space-available basis). |
| Price | Price: Free (Freemium) | Price: thousands $ |
| Content media | Video | Textbook |
| Discussion forums | Optional | Required and evaluated |
| Assessment | Machine-scored; peer | Instructor; machine-scored |
| Instructor contact | None expected | 24 hour response |

### Course enrollment

"Massive" student enrollments are a defining characteristic of MOOCs. Enrollment in a single course can be over a hundred thousand students. MOOCs are designed to operate at scale, and the design elements that enable massive enrollments will be discussed. "Enrollment" is a fuzzy term for MOOCs because students are not counted as in Mainstream Online University Courses, based on add-dates, drop-dates, and tuition payment dates.

MOOC enrollment metrics include course enrollment, videos viewed, and assessments completed (at various points in the course). For example, below are approximate "enrollment" and grade data from Dr. Mohamed Noor's (Duke) Introduction to Genetics and Evolution course, ended in April 2013.

- Student Enrollment (Johnsen, 2013)
  - 23,908 students enrolled in the class.
  - 15,500+ unique students watched at least one video.
  - 9,100+ unique students attempted the homework sets a total of 48,000+ times
  - 2,000 unique students posted the discussion forums.
  - 1831 people took both the midterm and final exam.*
- Grade distribution (Noor, 2013)
  - 73% of the people "enrolled" had a grade of 0.
  - 799 received a course score of 80 or higher.*
  - 1457 received a course score of 60 or higher.*
  - 3 people received a perfect 100% score on the entire course.
  - *additional students completed a Credit Recommendation Exam in lieu of the exams.

As another example, about 81,600 people enrolled in Kevin Werbach's (Wharton) Gamification course that ended in October 2012, and about 10,600 submitted the final exam (Werbach, 2012).

Mainstream Online University Courses have significantly lower course enrollments. The University of Phoenix has the largest total online enrollment with about 301,800 students (Harlin, 2013), with an average class size of 8 to 26 students per class (University of Phoenix, n.d.).

The University of Maryland University College is another large mainstream online course provider, with almost 263,000 online course enrollments in 2012 (UMUC, n.d.), and class sizes which average between 25-35 students (UMUC, n.d.b). Next we discuss the "openness" and "price" factors which, along with technology, enable MOOCs to operate at much larger scale than MOUCs.

### Openness

A student who enrolls in a university typically submits an application far in advance, then must survive a (sometimes selective) admissions process, then may enroll in a course on a space-available basis, providing course pre-requisites are met.

Coursera requires only an email address for a student to enroll in a course. Compared to enrolling in a Mainstream Online University Course, enrolling in a MOOC is comically simple. The "open" in MOOC means an enrollment process with as few hurdles as possible for students, including no scarcity of access, no application red-tape, no pre-requisites, and no (low) cost, which is discussed next.

### Price

In the spirit of openness, the typical price to a student to enroll and complete a MOOC is free. The only requirements are for the student to register with an email address and password, and complete the course requirements. This is compared to a price of thousands of dollars to enroll in a MOUC.

The University of Phoenix, a private, for-profit university mentioned previously having the largest online enrollment, charges tuition of $585 per undergraduate credit hour, plus any fees (University of Phoenix, n.d.b). UMUC, a public non-profit university with a large online enrollment, charges tuition of $499 per undergraduate credit hour for nonresidents of Maryland (UMUC, n.d.c). The average annual tuition and fees at a public 4-year institution in 2012 was $8655 per year, or about $288 per credit hour based on 30 credit hours per year (The College Board, 2012).

The price of "free" for MOOCs should be noted with an asterisk, however, because the pricing is moving to a "freemium" model, where the basic course is free and students can pay for optional "extras."

For example, The Introduction to Genetics and Evolution course from Duke which ended in April 2013, mentioned earlier, was offered with the options listed below. See an example of a certificate that was identity-verified and earned via a Credit Recommendation exam at http://tinyurl.com/boj9wjt.

- Price: The Introduction to Genetics and Evolution
  - Price to enroll and possibly earn a certificate: free
  - Price for the opportunity to earn a verified certificate: $49.
  - Price to take a proctored, online examination and possibly earn academic credit: $69
  - Price to transfer credit to a university: $40
  - Total price with options: $158.

Although not free, the freemium offering by Coursera and Duke was still a good value. A student could freely enroll in the Introduction to Genetics and Evolution course, taught by a highly-qualified professor (Muhamed Noor). By paying for the options a student could possibly earn two hours of lower-division semester credit for "introduction to biology or general science."

Dr. Noor and Duke developed and managed the course, Coursera delivered it and verified the student identities, ProctorU proctored the online examination, the American Council on Education (ACE) recorded the credit for the (ACE-certified) exam, and ACE holds the record for transfer to accepting universities.

Approximately 2000 institutions accept ACE-credit, for courses that may include the five Coursera courses (currently) certified by ACE for college credit. Other institutions are moving to accept MOOCs for academic credit directly. Antioch University contracted with Coursera to offer "course in a box" versions of MOOCs, developed by other universities, for credit as part of a bachelor's degree program (Kolowich, 2012).

Udacity, another MOOC provider, announced a pilot program to offer remedial and introductory math courses to students from San Jose State University at a student cost for each three-unit course of $150, significantly less than regular San Jose State tuition (Lewin & Markoff, 2013). It should be noted that most universities which have developed MOOCs do not themselves recognize them for credit purposes, with the exception of University of Washington (Thomas, 2012).

These data are presented to compare the price of a credit-bearing MOOC with a MOUC, which typically offers, and is taken for, academic credit. The freemium model does not diminish from the value of the free basic course to students who do not seek credit; the free course gives unfettered access for students to obtain instruction from elite universities.

### Content media

The use of video to present course content is another key difference between MOOCs and MOUCs. There are of course exceptions to this distinction, but the modal format of MOOCs is video presentation, and the modal presentation format of MOUCs is text.

The typical MOOC presentation at Coursera is a video of the professor, overlaid or interspersed with presentation slides. The setting is the professor sitting "across the table" and having somewhat informal conversation with the viewer. Other features of the video may include other audio and video clips, written notations by the instructor, and periodic "interactive" multiple choice questions for the student to answer.

Although no textbook is required, the framework of the MOOCs is based on a book, textbook, or other defined domain of knowledge. MOOCs often recommend chapter readings from a textbook, but make a point of designing the course to be completed without a student obtaining a textbook, another nod to the value of openness. The

typical MOUC presentation relies on text, primarily via a textbook or with individual readings.

### Discussion forums

MOOCs typically have active discussion forums that are optional for students. Students can post questions to, or answer the questions of, their peers. Forums are typically monitored by one or more teaching assistants, but there is generally no expectation that the professor will participate. The forums are typically independent of required course activities.

MOUCS also typically have discussion forms. Often students are required to participate in select forum discussions or in the discussions in general, and their posts are counted and/or evaluated as part of participation grade. Instructors are expected to be active and available in the discussion forums, and to respond to specific student questions within 24 hours, typically.

### Assessment

The majority of assessment in MOOCs is based on fully machine-scored multiple-choice questions. Options such as: quiz score revealed immediately or later; quiz attempt timed or not; quizzes accepted late; multiple quiz attempts; etc. are set at the preference of the professor. Short answer or fill-in-the-word questions are generally not used. Overall the assessment format is generous by university standards: assessments are often without time constraints, with access to notes, and with the ability to review course videos and other material such as presentation slides.

MOOCs often use peer assessments. To obtain credit for an "essay" type assessment, students must evaluate the essays of five peers, as well as evaluate his or her essay. Students use a grading rubric to evaluate the essays. By getting six data points based on a rubric, the professor can presumably get an evaluation that approaches the validity of that provided by graders or even a quick graduate-student read.

Two criticisms of peer evaluations in MOOCS are (1) poor quality peer evaluations are not useful as feedback, and may include abusive comments (2) the peer evaluation assessment rubric is simplistic, and (3) evaluating, and being evaluated by, non-English speakers is frustrating (Kolowich, 2012b). The diversity of students also calls into question the implementation of evaluation by peer. Is an English-speaking student who holds a PhD in the topic a peer to a non-English-speaking student aged 12? Does merely enrollment in the same MOOC define two students as peers?

MOUCs generally use or instructor-scored assessments and/or machine-scored multiple-choice questions. Students typically expect quick results from assessments and personalized instructor feedback on essay responses.

Instructors of MOUCs may also offer personalized feedback on assignments, such as papers or projects. MOUC students expect feedback from the instructor in some detail on major projects.

### Instructor contact

Students in MOOCs are told to expect no contact with the professor. Students may send an email or post a question to the discussion forms and expect a response from a staff member. Given the large enrollment, MOOCs offer little accommodation to students who experience technical problems or transient network problems that interfere with their assessments, other than a sincere apology. Students in MOUCS expect quick responses to emails sent to the instructor, typically within 24 hours.

Regarding other contacts, MOUC students expect interactive help on technical problems (e.g. network or learning management systems issues) by telephone or online chat. MOOC students may receive an email response to a question, but interactive help-desk assistance is not offered.

## DISCUSSION

MOOCs are different than Mainstream Online University Courses in several ways. MOOCs are easy to access and non-selective. MOUCs involve application and enrollment processes, prerequisite courses and qualifications, and the universities themselves are highly selective. MOOCs are free of tuition (or with inexpensive options). MOUCs cost thousands of dollars.

MOOCs rely on video to deliver content, with optional discussion forums. MOUCS rely on textbooks and often require participation online discussions. Both may use machine-graded assessments, but these are typically supplemented with peer evaluation in MOOCs and instructor evaluation and feedback in MOUCs. No instructor or help-desk contact is expected in a MOOC, but active and prompt attention from the instructor and technical support is the norm in MOUCs.

MOOCs have a lot going for them: easy access; free of tuition; good video production, excellent professor presentation, a peer learning community; and an adequate learning management system. MOOCs have their drawbacks as well:





1. Lack of instructor-student feedback and instructor interaction. The lack of interaction is a consequence of the large number of students, and is a significant limitation.
2. Reliance on machine-graded and peer-graded assessments. The use of machine-graded assessments is an essential factor to being able to offer free access to a large number of students, and evaluate their assessments. The use of peer-grading for essay-type assessments is also a response to the manpower constraint in grading, and yields high levels of dissatisfaction among students.
3. MOOCs fail to meet many student expectations. Even at a price of zero tuition, with appropriate disclaimers upfront, students will expect a level of normal service from their MOOC providers. Students will expect a resolution to a technical problem or a grading error. Students will expect answers to their questions. Students will expect allowances based on their excuses for problems submitting assessments. Students will expect accommodations for disabilities. At any non-zero tuition price these expectations will be amplified, and failure to meet expectations will result in student dissatisfaction.
4. Focus on low-level learning. Educators argue that the "pedestrian MOOCs, the simple podium lecture captured and released . . . do not in any way simulate a classroom experience, and constitute—at best—the efficient yet static delivery of course content. The delivery of course content is not the same as education" (Vaidhyanathan, 2012). "MOOCs tend to be math-and-computation based, and vocational rather than exploratory, idea-based, or laboratory-based." These are criticisms of MOOCs relative to the face-to-face classroom, and apply when MOOCs are compared to MOUCs also.

## MOOCS AND MOUCS IN COMPETITION

Do MOOCs compete with MOUCs? To a person interested in learning only (not academic credit), a MOOC would be a formidable, free, and potentially dominant choice alternative to a MOUC. However, most students enroll in a MOUC to earn academic credit to apply toward a university degree at the same institution. MOOCs are weak competitors to MOUCs in this regard, due to the limited for-credit offerings and somewhat cumbersome process to earn and transfer credit.

Early experiments in earning credit for MOOCs include (1) completing an American Council of Educators (ACE-approved) exam for credit, (2) completing a MOOC at a school that both presents and accepts the course for credit (e.g. U of Washington), and (3) completing a MOOC at a school that accepts third-party MOOC courses for credit (e.g. Antioch College; San Jose State).

People have had free access to video of university professor lectures and course materials (from the Massachusetts Institute of Technology (MIT), for example) for some time. MIT's project evolved into the OpenCourseWare Consortium (OWC) in 2008, a community of over 250 universities and other organizations who share "free, open, high-quality education materials organized as courses. Collectively, OCW Consortium members have published materials from more than 13,000 courses in 20 languages (OpenCourseWare, 2013)." Course material from prestigious universities offered freely online is part of a larger movement of open courseware and open educational resources (Caudill, 2012).

What is the MOOC breakthrough that has created such excitement about the format? According to Friedman (2012), MOOCs are "the next step: building an interactive platform that will allow the best schools in the world to not only offer a wide range of free course lectures online, but also a system of testing, grading, student-to-student help and awarding certificates of completion of a course for under $100." The value is in a prestigious university curating and presenting the content, and holding learners accountable for their progress and success.

In the "disruptive innovation" framework MOOCs should initially serve "those who couldn't otherwise assess traditional higher education" (Horn & Christensen, 2013). In this view it is not appropriate to compare a MOOC at present with a MOUC, which is a format that has been developed and improved by universities for years.

The appropriate competition for MOOCs is "nothing"—when people have no opportunity to access higher education at an elite university or to access a MOUC at any university. The good news for MOUCs is that MOOCs compete more directly with non-credit, inexpensive, self-study learning resources such as reading books, Internet research, or borrowing Great Courses video lectures from a library. Perhaps the "edutainment" value of MOOCs competes with watching other video, such television or recorded feature films.

The bad news for MOUCs is that MOOCs may not compete head-on with MOUCs initially, but "disruptive innovations improve over time to march upmarket. Eventually

the quality becomes just good enough for the established customers to flock to it" (Horn & Christensen, 2013). In other words, disruptive innovations like MOOCs eventually get "good enough" compared to MOUCs, and at a significantly lower price. Speculation about the net effect of nearly-free for-credit higher education on students and mainstream universities is beyond the scope of this paper.

This paper compared MOOCs with Mainstream Online University Courses, but in many ways MOOCs are more similar to large-enrollment face-to-face courses than online courses. Very large-enrollment (200+) courses at universities, for example (1) may rely on lecture to deliver course content, (2) may include discussion groups or labs led by staff or graduate assistants, (3) may use machine-graded assessments, and (4) may involve little interaction between the professor and students. By moving the lectures, assessments, and discussion groups online, one can essentially turn a large-enrollment course at a mainstream university into something similar to a MOOC, without the openness. MOOCs may be a substitute for large-enrollment face-to-face courses more so than for MOUCs.

Future research could examine the effectiveness of the MOOC format as a substitute for large-enrollment face-to-face courses. Research could look at options for universities to use the MOOC format to deliver instruction that fits with the MOOC strengths. Future research could examine the MOOC format's ability to address university challenges related to instructional efficiency, funding declines, remedial education, and variety in the curriculum, among others.

## CONCLUSION

The MOOC industry is growing rapidly, fueled by students interested in free higher-education learning, and the universities and venture capitalists willing to fund the courses. MOOCs from Coursera in particular are known for easy and free access to online video lectures from prestigious universities.

MOOCs are already effective substitutes for learning that is not for academic credit. Several experiments are under way that may result in MOOCs contributing to for-credit courses or delivering them entirely. Accredited universities may enhance the growth of MOOCs by accepting their academic credit and applying it toward degrees. Universities may resist recognizing academic credits based on MOOCs and thereby slow their growth, or ultimately give rise to an alternative (to accredited degrees) credentialing system altogether.

## REFERENCES


Caudill, Jason G. (2012). OpenCourseWare and Open Educational Resources:

The Next Big Thing in Technology-Enhanced Education? *Journal of Learning in Higher Education*, 8(2), 55. Retrieved from http://jwpress.com/JLHE/Issues/JLHE-2012-Fall.pdf?Submits10=Fall+2012+Issue+%28Copyright+2012+JW+Press%29

Coursera (2013a). Coursera grows to 3 million users today! Retrieved from https://twitter.com/coursera/status/314166206154280960

Coursera (2013b). About Coursera. Retrieved from https://www.coursera.org/about

Educause (2013). Massive Open Online Course (MOOC). Retrieved from http://www.educause.edu/library/massive-open-online-course-mooc

Empson, Rip (2013). Coursera Adds 29 Schools, 90 Courses And 3 New Languages To Its Online Learning Platform. *Techcrunch* (February 20). Retrieved from http://techcrunch.com/2013/02/20/coursera-adds-29-schools-90-courses-and-4-new-languages-to-its-online-learning-platform/

Harlin, Kevin (2013). University Of Phoenix Enrollment Slides, But EPS Beat. *Investor's Business Daily*. Retrieved from http://news.investors.com/business/032513-649210-apollo-group-university-of-phoenix-earnings.htm

Horn, Michael & Clayton Christensen (2013). Beyond the Buzz, Where Are MOOCs Really Going? *Wired*. Retrieved from http://www.wired.com/opinion/2013/02/beyond-the-mooc-buzz-where-are-they-going-really/

Johnsen (2013). Update on statistics (March 30) . Genetics and Evolution Class Statistics. Retrieved from https://class.coursera.org/geneticsevolution-002/forum/search?q=update+on+statistics

Kolowich, Steve (2012). MOOCs for Credit. *Inside Higher Ed*. Retrieved from http://www.insidehighered.com/news/2012/10/29/coursera-strikes-mooc-licensing-deal-antioch-university

Kolowich, Steve (2012b). Learning From One Another. *Inside Higher Ed*. Retrieved from http://www.insidehighered.com/news/2012/08/30/first-humanities-mooc-professors-road-test-courseras-peer-grading-model

Lewin, Tamar & John Markoff (2013). California to Give Web Courses a Big Trial. *The New York Times*, January 15. Retrieved from http://www.nytimes.com/2013/01/15/technology/california-to-give-web-courses-a-big-trial.html?_r=0

Noor, Mohamed (2013). Announcements: End of Coursera class. Introduction to Genetics and Evolution. Retrieved from https://class.coursera.org/geneticsevolution-002/class/index

OpenCourseWare (2013). About the OpenCourseWare Consortium. MIT. Retrieved from http://ocw.mit.edu/about/ocw-consortium/

Pappano, Laura (2012). The Year of the MOOC. *New York Times*, November 2. Retrieved from 2013 from http://www.nytimes.com/2012/11/04/education/edlife/massive-open-online-courses-are-multiplying-at-a-rapid-pace.html?pagewanted=1&_r=0

The College Board (2012). Trends in College Pricing. Retrieved from http://trends.collegeboard.org/college-pricing/figures-tables/tuition-and-fee-and-room-and-board-charges-over-time-1972-73-through-2012-13-selected-years

Thomas,Teri (2012). UW is first U.S. school to give credit for classes, certificate programs on massive open online course platform. *UW Today*. Retrieved from http://www.washington.edu/news/2012/07/18/uw-is-first-u-s-school-to-give-credit-for-classes-certificate-programs-on-massive-open-online-course-platform/

UMUC (n.d.). Fiscal Year 2012 Fact Sheet. Retrieved from http://www.umuc.edu/visitors/about/ipra/glance.cfm

UMUC (n.d.b). Faculty Careers—Frequently Asked Questions. Retrieved from http://www.umuc.edu/visitors/careers/facultyrecruit/faq.cfm

UMUC (n.d.c). Undergraduate Tuition Per Credit. Retrieved from http://www.umuc.edu/students/payments/tuitionarchives/spring13_ug.cfm

University of Phoenix (n.d.). Student Orientation. Retrieved from http://www.universityofphoenix.com/studentorientation/class_grps.asp

University of Phoenix (n.d.b). Estimate Tuition and Expenses. Retrieved from https://www.phoenix.edu/tuition_and_financial_options/estimate-tuition-and-expenses.html#url=summary

Vaidhyanathan, Siva (2012). What's the Matter With MOOCs? *The Chronicle of Higher Education*. Retrieved from http://chronicle.com/blogs/innovations/whats-the-matter-with-moocs/33289

Werbach, Kevin (2012). Gamification Course Wrap-up. Retrieved from https://class.coursera.org/gamification-2012-001/lecture/88

This is intentionally blank.

# Critical Thinking in the Classroom...and Beyond

**Linda M. Murawski, EdD**
Adjunct Professor
Department of Human Resources Development
Graduate & Professional Studies
Tusculum College
Knoxville, Tennessee

## ABSTRACT

*Critical thinking in the classroom is a common term used by educators. Critical thinking has been called "the art of thinking about thinking" (Ruggiero, V.R., 2012) with the intent to improve one's thinking. The challenge, of course, is to create learning environments that promote critical thinking both in the classroom and beyond. Teaching and practicing critical thinking provides adults with the opportunity to embrace and take charge of their learning. Adults engaged in critical thinking approach the classroom experience differently. Typically, students who implement critical thinking skills approach the courseware in a more thoughtful and effective manner, ask more challenging questions and participate in the learning process more intensely. This critical thinking process endures beyond the classroom and into the workplace. This session examines the background of critical thinking, its role in the classroom and beyond that to the workplace.*

## INTRODUCTION

Critical thinking is a common course in college and university settings today. Frequently taught as a way to "improve" thinking, the art of critical thinking involves an approach to thinking--more importantly to learning--that embraces changing how one thinks about thinking. Critical thinking incorporates how learners develop and apply thought to understand how thinking can be improved. Typically, a person is deemed a critical thinker to the extent that he or she regularly improves their thinking in an intentional manner. The basic idea undergirding the study of critical thinking is simple--to determine strengths and weaknesses in one's thinking in order to maintain the strengths and make improvements by targeting the weaknesses.

The word *critical* for this paper is not intended to denote a negative approach to thinking. Critical implies evaluation of thoughts, ideas or judgments with awareness, creativity and refinement of these processes as needed.

Critical thinking has its roots in the work of such notables as Socrates, Thomas Aquinas, Francis Bacon, Rene Descartes, John Locke and Sir Issac Newton in its earliest times. More modern contributions can be attributed to John Dewey, Ludwig Wittgenstein, and Jean Piaget among others. Work completed by Robert Ennis in the 1960s gave rise to critical thinking skills taught in the classroom and reflected in the workplace. Ennis focused on critical thinking as a learned skill that could be transferred to the workplace if taught and practiced. As a result of many years of research, analysis, teaching and practice, Ennis concluded that critical thinking is "focused on deciding what to believe or do," (Ennis, p. 10).

Ennis separated critical thinking into two categories: dispositions and abilities. The ideal critical thinker, in his writings, is disposed to reach a "right" decision, present that position honestly and clearly, consider others' points of view, seek to be well informed, and to avoid intimidating or confusing others. Additionally, that critical thinker has the ability to focus on a question, analyze and argument, judge the creditability of a source, make and value judgments, clarify and refine their viewpoint, support their viewpoints appropriately, and to imaginatively suppose and integrate the logic of a viewpoint with sensitivity to others (Ennis, 2011).

Vincent Ruggiero writing in *The art of thinking: A guide to critical and creative thought* describes thinking as "any mental activity that helps formulate or solve a problem, make a decision, or fulfill a desire to understand. It is searching for answers while reaching for meaning" (Ruggiero, 2012 p. 4). He notes that thinking may not always be a conscious effort. There are forces at work--beneath the surface so to speak-- within the unconscious that dictate one's overt thinking. An example might be driving to a daily destination such as work without consciously remembering each landmark along the route. This type of thinking occurs without much critical thought at all. Indeed, the brain seems to be on auto-pilot in this situation. Critical thinking according to Ruggiero is more at-

tuned to thinking that occurs to solve problems, analyze issues or make decisions. Staying with the aforementioned example, if the road normally driven is blocked or closed, the driver would need to critically think about an alternate route. Which route is shortest to the destination? Which route might not be blocked like the one encountered? What could happen if that route were taken? All these questions are examples of critical thinking based on a problem needing to be solved.

Problem solving is the ultimate intent of critical thinking for many scholars who study the phenomenon. Skills in problem solving, issue analyses and decision making are increasingly expected of employees. Evidence is growing that critical thinking is "expected" in the workplace. More than 400 senior HR professionals were asked in a survey to name the most important skill their employees will need in the next five years. Critical thinking ranked the highest – even more than innovation or the application of information technology. This response reflects how the nature of work and the skills required have been changing dramatically (Society for Human Resources Management, 2006).

### Meaning of Critical Thinking

In a recent survey by the American Associate of Colleges & Universities (AACU), 74 percent of respondents indicated that critical thinking was a core learning objective for the campus's general education program (AACU Report, 2009, p. 4). While there is a general agreement among higher education professionals that critical thinking skills are important, there is a lack of clarity about what exactly critical thinking *is*. A California study found that only 19 percent of faculty could give a clear explanation of critical thinking even though the vast majority (89 percent) indicated that they include it in their curriculum (Paul, Elder,& Bartell, 1997). While interviewing a private liberal arts college faculty, Halx and Reybold (2005) explored instructors' perspectives of undergraduate thinking. Most participants were "eager to promote critical thinking" (p. 300) but the authors noted that none had been specifically trained to do so. The result was that instructors each developed and promoted their own distinct definition of critical thinking.

To arrive at a working definition of critical thinking, a review of the literature suggests several definitions as listed in Appendix A. These definitions were gleaned from many that appear in various publications. A consensus is difficult--if not impossible--to reach. Scholars, journalists and authors of every ilk "poke" at a definition that will satisfy the masses. One could speculate that this attempt to qualify critical thinking will continue throughout the ages and one whose definition suits the occasion is the mostly likely one that a writer will select.

### Characteristics of a Critical Thinker

Critical thinkers are those persons who can move beyond "typical" thinking models to an advanced way of thinking. Critical thinkers produce both more ideas and improved ideas than poor thinkers (Ruggiero, 2012). They become more adept in their thinking by using a variety of probing techniques which enable them to discover new and often improved ideas. More specifically, critical thinkers tend to see the problem from many perspectives, to consider many different investigative approaches, and to produce many ideas before choosing a course of action. In addition, they are more willing to take intellectual risks, to be adventurous, to consider unusual ideas, and to use their imaginations while analyzing problems and issues.

Critical thinkers test their first impressions, make important distinctions among choices, and base their conclusions on evidence rather than their own feelings. Sensitive to their own limitations and predispositions, they double-check the logic of their thinking and the workability of their solutions, identifying imperfections and complications, anticipating negative responses, and generally refining their ideas.

Critical thinkers learn to focus. They do not experience fewer distractions than others do; they simply deal with them more quickly and more effectively than ineffective thinkers do. There is no magic in what effective thinkers do. They practice their skills much like any learned skill.

Critical thinkers typically (Ruggiero, 2012):

- Acknowledge personal limitations.
- See problems as exciting challenges.
- Have understanding as a goal.
- Use evidence to make judgments.
- Are interested in others' ideas.
- Are skeptical of extreme views.
- Think before acting.
- Avoid emotionalism
- Keep an open mind
- Engage in active listening

Conversely, non-critical thinkers, typically (Ruggiero, 2012):

- See a limited number of perspectives (sometimes just one)
- Take the first approach that occurs to them
- Judge quickly—maybe too quickly and not critically
- Fail to listen actively
- Think their ideas are the best--all others are less
- Resist change
- Think in stereotypes
- Deceive themselves often

## CRITICAL THINKING IN THE CLASSROOM

As noted earlier, critical thinking is an oft-used phrase in classroom settings. Adult learners are encouraged to develop these skills and practice them situationally. Critical thinking means reviewing the ideas produced, making a tentative decision about what action will best solve the problem or what belief about the issue is most reasonable, and then evaluating and refining that solution or belief (Ruggiero, 2012). The effects of developing keen problem solving skills cannot be understated. Problem solving skills have the potential to impact individuals more immediately and often with ramifications for the future. Those who attend to the notion of improving these skills are characterized in some important ways listed in the table below as posited by Ruggiero, 2012)

**Chart of Problem Solvers**

| Effective Problem Solvers | Ineffective Problem Solvers |
|---|---|
| Read a problem and decide how to attack it. | Cannot determine where or how to begin. |
| Bring their knowledge to bear on the problem. | Convince themselves they lack sufficient knowledge. |
| Solve a problem systematically: simplify, define and break into parts | Jump in haphazardly jumping from one part to another as they justify their first impressions instead of testing them. |
| Trust their reasoning and experience thus boosting their confidence. | Tend to distrust their reasoning and lack confidence in themselves. |
| Maintain a critical attitude throughout the problem solving process. | Lack a critical attitude and take many assumptions for granted. |

Acknowledging that critical thinking is an important skill is fundamental. Critical thinking can be taught and should be taught in a directed manner providing students with practice while evaluating and testing ideas. Critical thinking is not a natural byproduct of taking college courses, even courses whose subject matter necessitate critical thinking for success. In *Developing Critical Thinkers,* Stephen Brookfield (1987) emphasizes that "a willingness to risk experimentation in one's teaching is an important aspect of modeling change and promoting critical openness in learners" (p.81). To that end, educators influence whether a student will learn critical thinking skills in their academic journey.

### Benefits of Critical Thinking for the Classroom

Instructors who teach critical thinking provide students with the opportunity to understand and take charge of their learning. Students who implement critical thinking skills approach the courseware in a more thoughtful and effective manner, ask more challenging questions and participate in the learning process more intensely.

Students who develop critical thinking skills often practice those skills well into latter life. These skills may, in fact, literally change their lives forever. Developing critical thinking abilities translates to both academic and job success. Using these skills, students tend to expand the perspectives from which they view the world and increase their ability to navigate the important decisions in learning and in life.

At one time, educators believed that content knowledge was enough for students to succeed. It was thought that --for the most part--information that students learned in school was the same information that their parents learned. That paradigm has shifted in a changing world typified by instant communication, 24/7 news cycles and the desire to know as much as possible as quickly as possible. The power and speed of technology has created a world where information changes quickly, and new ideas can be distributed and adapted almost instantaneously. It has also resulted in inaccurate and mis-information which has to be sorted through and questioned critically. Today it is important that students learn critical thinking skills, so they can be both the inventors and the critics of the new information. Edward de Bono (2004) in de Bono's Thinking Course writes, "Knowledge is not enough. The creative, constructive, design and operating aspects of thinking are just as important as knowledge" (p.6).

A caution is in order here. To develop critical thinkers is to develop both the best and worst in thinking. Those who master critical thinking--a long and winding path--may at first use their newly found skill in a negative way.

It is prudent to remember that to thinki critically is not to criticize in a negative manner but rather to "think deeply or to question." According to Michael Roth (2013) "In a humanities culture in which being smart often means being a critical 'un-masker,' our students may become too good at showing how things *don't* make sense."The goal of critical thinking is to learn a way to think more deeply, solve problems better, communicate, collaborate and innovate more effectively in our personal as well as organizational lives.

## CRITICAL THINKING IN THE WORKPLACE

Why is critical thinking important in the workplace? Critical thinking is applicable whenever people are called to make a decision or resolve a problem. Working people make decisions. Some are good decisions that move the business forward and increase profit. Others are poor decisions that hurt the business and reduce profit. This is a frequent occurrence in workplaces at any level.

Management and upper level executives are not the only ones who have the responsibility of making decisions; decision making and problem solving are a constant in organizations. Each person in an organization or business no matter what their position makes hundreds of decisions every day and each one is an opportunity for success or failure.

### Benefits of Critical Thinking in the Workplace

Critical thinking in the workplace has the potential to impact people either in a negative or positive way through the decision making process. Often decisions are made and passed along to people within organizations without much thought based on the need to take some action. In this case, the impact for "normal" actions may be harmless based on daily routine. But for critical issues/ problems, "bad" decisions can negatively impact or render a serious blow to the business. To mitigate the risk of serious negative consequences, it is important to make decisions by carefully weighing them based on information that has been thoroughly analysed, evaluated and searched for the most reasonable solution.

The practice of critical thinking encourages employees and managers to observe various situations, weigh all possible solutions, then decide on a course of action. This process can be a lengthy one that necessitates input from multiple sources at different levels within the organization. Using critical thinking skills is a benefit for employees as well as management when the practice is modeled and promoted from the top to the bottom of the organizational hierarchy (Anderson, 2013).

Evidence is strong that critical thinking skills are need and desired by employers. In a 2007 Society for Human Resources Management Report, employers placed the greatest weight on employee critical thinking and problem solving (47% and 46 % respectively) skills as desired skills for new hires. Potential employees reported-- as a recent change in their desired skills before entering the workplace-- critical thinking/problem solving (48%), creativity/innovation (40%) and leadership (40%) as necessary tools for employment.

Benefits of advancing critical thinking are more than a "nice" thing to do. This skill can literally improve profits and capabilities of employees. Given the ability to apply critically enhanced thinking, companies/organizations can expect a different quality of corporate culture. That improved culture may translate into dollars or more revenue in the long run or improved personal communications, cooperation and collaboration in the short run. Potential organizational impacts of critical thinking are suggested in Appendix B.

Critical thinking brings new ideas and often processes to the workplace. For example when approaching a problem solving issue surfaces in the workplace, a common reaction is to assume that it falls into a predetermined category. Critical thinking does not make any assumptions, and using the process of critical thinking in the workplace removes the temptation to immediately classify every issue under something that has happened in the past. Employees can look beyond conventional solutions, search for new ideas, and contemplate the alternatives to address the problem. Using critical thinking as an approach to problem solving, issue resolution or new product or processes can liberate thinking in many different way. Additionally, critical thinking looks at the impact beyond a specific step in the decision process; i.e., if step one changes in a decision, then the follow-on steps need to be examined critically as well. This approach to thinking opens possibilities that may otherwise lie unfolded.

## SUMMARY

Critical thinking skills learned in the classroom definitely have an impact on future learning in the workplace. Once learned, these skills imprint workers to think deeply and critically about workplace issues and their individual roles in enhancing corporate cultures while adding value to the products or services that an organization provides to the community or to the world.

Critical thinking skills are transferable from the classroom to the workplace. Transferring critical thinking skills is evidenced by the ability of an individual worker to make effective, well thought out and tested decisions that impact daily life in the workplace. May of these decisions extend beyond that individual worker and have a bearing on others in their own decision making.

Critical thinking is the lifeblood of the most essential workplace skills, including problem solving, decision making, good judgment and sound analysis. Organizations that can attract, retain and develop the best critical thinkers have a significant and measurable competitive advantage in the business world (Facione, 2013).

## REFERENCES


Anderson, A. (2013) What are the benefits of critical thinking in the workplace? Retrieved from: http://smallbusiness.chron.com/benefits-critical-thinking-workplace-11638.htm

*Are They Really Ready to Work? Employers Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century US Workforce (2006)*. Study conducted by The Conference Board, Partnership for 21st Century Skills, Corporate Voices for Working Families, and the Society for Human Resource Management.

Association of American Colleges and Universities. (2009). Learning and assessment: Trends in undergraduate education. Retrieved from www.aacu.org/membership/documents/2009MemberSurvey_Part1.pdf

Brookfield, S. D. (1987) Developing critical thinkers: challenging adults to explore alternative ways of thinking and acting. San Francisco, CA: Jossey-Bass, Inc.

Burbach, M. E., Matkin, G. S., & Fritz, S. M. (2004). Teaching critical thinking

in an introductory leadership course utilizing active learning strategies: A confirmatory study. *College Student Journal, 38*(3), 482-493.

Debono, E. (2004). Debono's thinking course. London: Facts on File Publishing Co.

Dewey, J. (1910). *How We Think*. Buffalo, NY: Prometheus Books.

Ennis, Robert H. (2011). Critical thinking: Reflection and perspective, Part I. *Inquiry,* Vol. 26, 1.6

Ennis, Robert H. (2007). 'Probable' and its equivalents. In Hans V. Hansen & Robert C. Pinto (Eds.), *Reason reclaimed: Essays in honor of J. Anthony Blair and Ralph H. Johnson*. Newport News, VA: Vale Press. 243-256.

Ennis, Robert H. (2006). 'Probably'. In David Hitchcock & Bart Verheij (Eds.), *Arguing on the Toulmin model*. Dordrecht, the Netherlands: Springer. Pp. 145-164.

Ennis, Robert H. (2004). Applying soundness standards to qualified reasoning. *Informal Logic*, 24, 1, 23-39.

Haix, M. D., & Reybold, L E. (2005). A pedagogy of force: Faculty perspectives of critical thinking capacity in undergraduate students. *The Journal of General Education*, 54(4), 293—315. DOI:10.1353/jge.2006.0009

Elder, P.R., & Elder, L. (2008). *The thinker's guide for conscientious citizens on how to detect media bias & propaganda in national and world news*. Dillon Beach: CA: Foundation for Critical Thinking Press.

Elder, P.R, & Bartell, T. (1997). Study of 38 public universities and 28 private universities to determine faculty emphasis on critical thinking in instruction. Retrieved fromRPAUL-3 8public.cfm

Facione, P. A. (2013). *Critical thinking: What it is and why it counts*. Millbrae, CA: Measured Reason and the California Academic Press.

Facione, P. A. (1990). *The Delphi report*. Millbrae, CA: The California Academic Press.

Ruggiero, V. R. (2012). *The art of thinking: A guide to critical and creative thought* (10th ed.). New York, NY: Longman.

Roth, M.S. (2013). Beyond critical thinking. *The Chronicle of Higher Education*. April 29, 2013. Retrieved from: http://chronicle.com/article/Beyond-Critical-Thinking/63288/

Society for Human Resources Management (2007). *Critical skills needs and resources for the changing workforce*. Retrieved from: www.shrm.org.

Wisegeek, (n.d.) *What is critical thinking?* Retrieved from: http://www.wisegeek.org/what-is-critical-thinking.htm

**APPENDIX A**
**Selected Definitions of Critical Thinking**

- The art of thinking about thinking (Ruggiero, V.R., 2012, p.5)
- Critical thinking focuses on deciding what to believe or do, (Ennis, p. 10).
- Critical thinking is a mode of thinking about any subject, content or problem in which the thinker improves the quality of his or her thinking by skillful analyzing, assessing and reconstructing it. (Elder & Elder, 2008)
- Critical thinking is purposeful, self-regulatory, judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based" (P. A. Facione, 2006, p. 21).
- Active, persistent, and careful consideration of a belief or supposed form of knowledge in the light of the grounds which support it and the further conclusions to which it tends. (Dewey, 1910, P. 9)
- Critical thinking is the ability to apply reasoning and logic to new or unfamiliar ideas, opinions, and situations. (Wisegeek, n.d.)

**APPENDIX B**
**Potential Organizational Impact of Critical Thinking**

| Critical Thinking Skills | Critical Thinking Behaviors | Outcomes |
|---|---|---|
| • Distinguish fact from opinion<br>• Seek multiple perspectives<br>• Recognize assumptions<br>• Identify bias and persuasion<br>• Evaluate arguments for relevance and accuracy<br>• Weigh data appropriately<br>• Use multiple sources rather than a single source<br>• Balance logic and emotion<br>• Use diagrams to visually represent processes and thinking | • Asks questions that furthers understanding<br>• Doesn't draw conclusions too hastily<br>• Considers all sides of an argument<br>• Uses criteria to evaluate information<br>• Can "push back" effectively<br>• Recognizes other people's agendas<br>• Explores multiple perspectives<br>• Adjusts assumptions in light of new evidence<br>• Understands how conclusions were drawn<br>• Identify what's not known and what isn't | • Well-thought out decisions based on a sound rationale and evidence<br>• Information, conclusions and decisions are revised as new information comes to light<br>• Decisions reflect a "systems thinking" rather than "silo" approach<br>• Information evaluated based on evidence, logical inference, and informed guesses<br>• Ideas and plans are presented in a coherent and well thought out fashion |

# Developing Research Skills for Undergraduate Business Students: Experiential Learning on Introduction to Personnel Administration and Industrial Relations Course

**Carmen I. Figueroa, Ph.D.**
University of Puerto Rico,
Mayagüez Campus
**Cándida González, PHR**
University of Puerto Rico
Mayagüez Campus

## ABSTRACT

*This paper reports on research into developing research skills in human resources management of apprentices through experiential learning. The target groups were undergraduate business students registered in the Introduction to Personnel and Industrial Relations course. The research identified the appreciation level of importance and satisfaction from apprentices since the acquisition and development of research skills for human resources management discipline. Data analysis indicates, firstly the importance of acquisition and development research skills in human resources management are congruent with the needs required for the contemporary organization and career objectives of the apprentices and future human resources professionals. The results obtained have positive implications on apprentices from research skills statements such as organizational goal's achievement, job analysis, human resources audit, strategic planning, statistical analysis, and evidence-based in human resources management to diminish the skills gap through the curriculum development in human resources management.*

## INTRODUCTION

The upward trend in contemporary organizations its focus on work performance at individual, group and inter-organizational levels, enforcing the business education to promote on undergraduate students the acquisition and development of basic skills to deal with themes such as: diversity, learning organization, strategic-based metrics, talent management, workforce planning, among others. McLagan (1998:179) identified several essential competencies for human resources development practitioners aggregated into four competency clusters: business competencies, interpersonal competencies, technical competencies and intellectual competencies. Particularly, this research revealed competencies such as: business and industry understanding, cost-benefit analysis skills, group process skills, career development understanding, research skills, model building skills, among others.

Basically, the concern of skills shortages in the accessible labor pool emerges to be rising. The higher education environment needs to understand the necessity of the contemporary employers to generate graduates with the required skills for the today's workplace. The Society of Human Resources Management details on the executive summary report of the SHRM 2007 Symposium on the Workforce Readiness of the Future U.S. Labor Poll, "employers have not clearly stated the skills and capabilities they desire, and the U.S. educational system is not producing the quantity and quality of graduate needed." Dohm and Sniper (2007) highlights the projections from the Bureau of Statistics (BLS) on the U.S. Department of Labor, between now and the year 2016 twice as many job openings – 33.4 million – will be the result of replacements needs as compared to 17.4 million due to economic growth.

Furthermore, the Association for Training and Development (ASTD) (January 2013) redefined the competency model on 2013 focus on the skills and knowledge required for human resources development practitioners. The 2013 ASTD Competency Model emphasizes on foundational competencies (business skills, global mindset, industry knowledge, interpersonal skills, personal skills, and technology literacy) and mainly details training and development areas of expertise such as: integrated talent management, change management, knowledge management, change management, performance improvement among others. The *Introduction to Personnel and Labor Relations* course was designed to accommodate multiple learning styles and maximize the learner's experience. In this study, the course combines multiple student-centered activities to accomplish judgments, and engaging their learning styles to particular course curriculum or instructional design.

## REVIEW OF LITERATURE

### Institutional Background

The Mayagüez Campus of the University of Puerto Rico (UPRM) originated in 1911 as the College of Agriculture. The development and diversification of academic programs maintains its reputation as the key institution in higher education in the Caribbean and Puerto Rico. Sharma and Dika (2007) emphasize that certain aspects of the vision of UPRM should ensure continuity as a leading institution of higher education in Puerto Rico and the Western Hemisphere so that meets the needs of modern society considering the dynamic global environment and the constant search for truth, knowledge, justice and peace. The quality of the students and graduates of UPRM has been recognized globally for organizations that recruit students for permanent positions, internships in Puerto Rico and the United States as well as exchange programs worldwide.

Predominantly, the history of the College of Business Administration at UPRM spans over forty years. The vision of the College of Business Administration of the Mayagüez Campus following points; *"in Puerto Rico be the best option in Business Administration for the best students, faculty and recruiters."* Similarly, the mission of the College of Business Administration of the Mayagüez Campus outlines the statement that follows: *"prepare qualified graduates for the business world through a comprehensive education and promote research excellence recognized locally and internationally."*

The *Introduction to Personnel Management and Industrial Relations* (ESOR 4008) is a core curriculum undergraduate course in Business Administration. Essentially, ESOR 4008 allows the student to understand processes such as personnel management, recruitment, selection, training and administration of salaries and wages. The course is designed to enable students to develop interpersonal skills, ethical and professional conduct, the acquisition of knowledge and skills from the perspective of business nationally and internationally and the development of skills, abilities and knowledge related to business. The teaching-learning course design includes active learning through class discussions, case studies, exercises, experiences, among others.

### Experiential Learning Theory

Experiential learning theory involves active learning mainly from experience with positive outcomes. The primary focus should be on engaging students in a process that best enhances their learning (Dewey 1987). Also, Lewis and Williams (1994) highlight the significance of the twenty-first century on the transformation from formal to experience-based. Prior research has reveal that learning styles are influenced by personality type, educational specialization, career choice, current job role and tasks, and cultural influences (Kolb, 1984; Kolb & Kolb, 2005). Also, experiential learning may be obtained from a variety of sources, such as work experience, training activities, cooperative education opportunities, among others. The learning process as a cyclical process focused on the four framing stage-cycles such as concrete experience, reflective observation, and abstract conceptualization and planned experimentation.

Education and pedagogy discipline offers many ways to drive the learning experience between the facilitator and apprentices. As well, experiential learning theory suggests an approach to study management as a learning process that is dynamic and holistic, working at three different levels (individual, team and organization). The main question commonly determines the best group of learning techniques to establish formal educational experience to promote knowledge. The upward trends from contemporary organizations requesting knowledge and skills development on business research and the usage of metrics in promoting better results place challenges on business education. The experiential learning process provides several learning constructs such as knowledge, skill, and value directly from the experience and outcomes. To meet these trends, organizations are placing alliances and partnerships with universities including a range of experiential opportunities extending from internships, cooperative education, experiential fields experiences, among others to expand the content understandings and challenge the apprentices.

### Development of Research Skills

The higher education environment in the twenty-first century aims to further develop the abilities, skills and competencies, particularly in the area of human resources management. Mainly, the contemporary organizations enforced the undergraduate student's background with the business research skills appropriate to addressing managerial challenges and organizational goals. Ulrich (2012) argued about the capability of the human resource professional to acquire and develop the essential competencies as strategic thinker, change agent, talent expert, data oriented, and credible leader. Also, Ulrich (2012) mentioned about the contemporary challenge to Business Schools to consider the transformation of undergraduate business students and prepare them with the essential competencies such as active strategist, organization navigation expert, technology champion, active leader,





and human resources mastery to deal in the 21st organizations scenario. Business Schools should consider the curriculum development to promote the essential competencies domain in undergraduate business students such as capability and talent management, credible leader, business and human resources integration, strategic planning, change management.

Descriptive studies suggest intellectual gain is associated with undergraduate research (KHakim 1998, Kardash 2000, Raukhous and Czaja 2002, Hathaway et al. 2002). The development of research skills place based learning when carefully selected experiences are supported from classroom interaction promoted by reflection exercises, critical analysis, among others on special themes, simulation exercises, synthesis, case analysis portfolio, written reports, and oral presentations, among others. The instructional design for the development of research skills includes the consideration of both practical and traditional research on human resources development. Apprentice's experiences are structured to require the learner to take the initiative, make decisions, and to be accountable for the results. The purpose of this study is to examine an instance of significance change of apprentices in higher education for the acquisition and development of knowledge in research methodology in human resources management. This study aims to develop the first stage as complete a picture as possible of process, challenges, and outcomes necessary to develop the research methodology in human resources management and labor relations course.

The principle research questions this work seeks to answer are:

1. What research skills do apprentices most hope develop in research skills in human resources management?
2. How did the apprentices learning experiences through the classroom practices contribute to the awareness and the acquisition of knowledge in research methodology in human resources management?

## METHODOLOGY

Data for this study were gathered from 71 undergraduate students (apprentices) enrolled in the *Introduction to Personnel Administration and Labor Relations* course at a public university in the western region of Puerto Rico. The study design is quantitative and descriptive. The first phase of this study comprises the first academic semester (Fall 2012). The aim of the study was to derive an insight in developing research skills in human resources management by the appreciation of the apprentices through the classroom experiential learning activities.

The undergraduate business students at the College of Business Administration are requiring completing the *Principles of Management* course (ESOR 4006) as prerequisite of the *Introduction to Personnel Administration and Labor Relations* course. Also, the undergraduate students enrolled in the course of 4008 were categorized as ESOR indicator study for analyzing the acquisition and development of research skills in the management of human resources. The instructional design based on experiential learning includes a combination of methods such as case analysis, simulations, role playing, among others. A first pilot test (with four apprentices) helped to identify a number of problems of wording. The population size of apprentices enrolled in the Introduction to Personnel and Labor Administration was 75 undergraduate business students from the College of Business Administration at University of Puerto Rico – Mayaguez.

At the end of the semester, a total of 71 apprentices were asked to fill out a questionnaire at classroom and could be used for statistical analysis. They complete a self-administered questionnaire/assessment with closed questions labeled as five-point Likert-scales (5=strongly agree, 1=disagree) to identify the acquisition and development of the research skills in the *Introduction to Personnel Administration and Labor Relations* course. The instrument was reviewed by experts in the field of human resources and was administered before the end of the First Semester 2012 -2013 (Fall 2012). The responses received from apprentices overpass the minimum quantity of responses with a confidence level of 95% and 5% in the margin of error.

Table 1 details the nineteen of statements corresponding to the design of the questionnaire comprising the research skills in human resources management based on the main themes of the course textbook. The *Organizational Statements Cluster* comprise seven statements summarize the relevant concepts in research on what human resources management it's important to all managers in organization. The *Workforce Planning Statements Cluster* consist of six statements includes the important viewpoints on research that managers should know what they want to accomplish strategically before formulating and putting in place specific humans resources management policies and practices. The *Human Resources Management Statements Cluster* elaborates the main research features the strategic human resources management process, human resource management metrics and analysis. Also, the questionnaire includes five statement lines academic and demographic data (degree, major, minor, year of study, and gender).

**Table 1**
**Research Skills in Human Resources Management**
**List of Statements***

| Cluster | Definition |
|---|---|
| **Organizational Statements Cluster** | |
| Goal's Achievement | The research methodology in human resources management supports the strategic goal's achievement in the organization. |
| Business Plan | The research methodology in human resources management supports the creation of the business plan and improves productivity through Human Resources Information Systems (HRIS). |
| Management Decision Support | Strategic planning is important to all managers in order to supports decisions using Human Resources Systems Activities Metrics. |
| Benchmarking | Benchmarking figures (By Industry, Employer Size, Company Revenue, and Geographic Region, among others) enables employers to compare their own HR-related metric results with those of other companies. |
| High Performance Work Practices | Employers today often views all the staff-train-reward activities as part of a single integrated talent management process using HR strategic-based metrics. |
| EEO Laws Compliance | Equal Employment Opportunity (EEO) laws compliance should be able to apply procedures regarding HR activities like employment selection, record keeping, and preemployment inquires using research methodology. |
| Scientific, Evidence-Based Approach | One reason to measure, benchmark, and scientifically analyze human resources management practices is to identify and promote high-performance work practices. |
| **Workforce Planning Statements Cluster** | |
| Talent Management Process | Today employers often view all the staff-train-reward activities as part of a single integrated talent management process using HR Strategic-based metrics. |
| Workforce/Talent Analytics and Data Mining | Employers increasingly us workforce analytics (or "talent analytics") software applications to analyze their human resources data and to draw conclusions from it. |
| Data Mining | Data mining systems use tools like statistical analysis to shift through data looking relationships; also the manager can discover patterns that he or she can use to make predictions. |
| Methods of Collecting Job Analysis Information | The methods for collecting job analysis information include interviews, questionnaires, observation, participant dairy/logs, and quantitative techniques such as position analysis questionnaires. |
| Strategic Planning | Strategic-based metrics are metrics that focus on measuring the activities that contribute to achieveing company's strategic aims. |
| Human Resources Audit | For managers, the key point of being "scientific" is to make better human resources management decisions. |
| **Human Resources Management Statements Cluster** | |
| Human Resources Trends and Metrics | The management process depends on human resources trends and metrics to audit both the firm's environment, and the firm's strengths and weaknesses. |
| Human Resources Methods | The huge impact on how people work, and therefore on the skills and training today's workers needs illustrates how human resources management methods can boost organization's profitability and competitiveness. |
| Benefits of Metrics | The HR managers use the benefits of metrics (organizational data, compensation data, and employment data, among others) by which to gauge whether his or her new policies and practices are producing the required employee competencies and behaviors. |
| Strategic-Based Metrics | Data mining shifts through huge amounts of employee data to identify correlations that employers then use to improve their employee selection and other practices. |
| Statistical Analysis | Human Resources audit generally involves an analysis by which organization measures, compasses, and determines the accomplishments to develop HR function. |
| Evidence-Based Human Resource Management | Human Resources Managers should be able to apply evidence-based human resource management, which means the use of data, facts, analytics, and scientific rigor, critical evaluation to support HRM proposals, decisions, practices, and conclusions. |

*The list of statement and the corresponding definition was based on the main topics included in the textbook selected (Dessler, 2013) for the Introduction to Personnel Administration and Labor Relations.





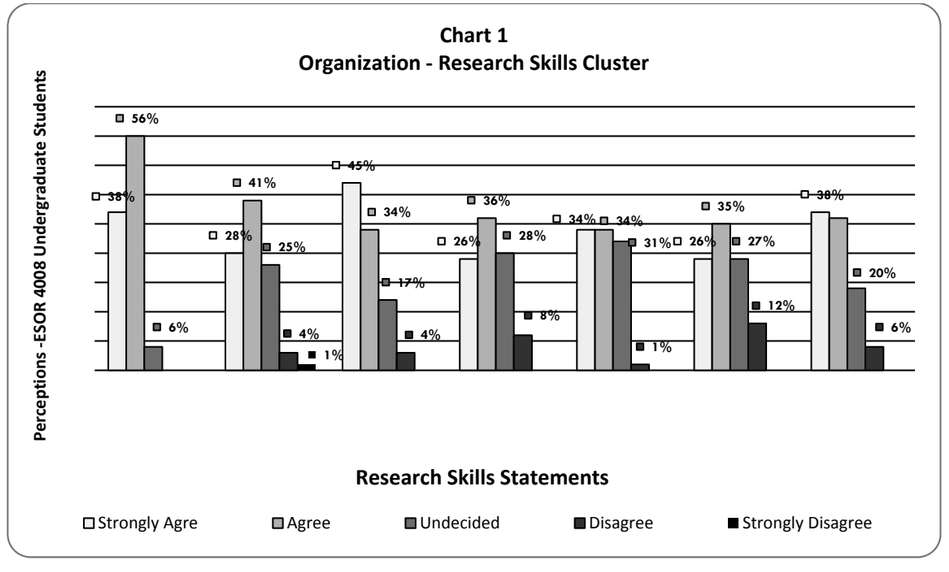
## FINDINGS

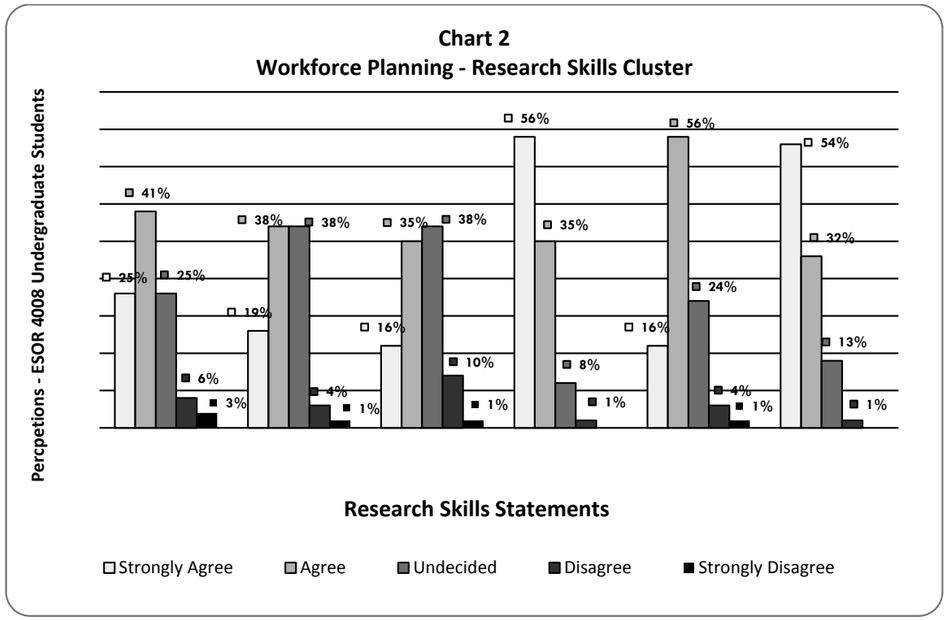
Chart 1 shows the organizational cluster from the list of statements on research skills in human resources management. The organizational cluster includes the skills development on the following statement such as: organizational goal achievement, business plan, management decision support, benchmarking, high performance work practice, and EEO laws compliance. The apprentices enrolled on the undergraduate course *Introduction to Personnel Administration and Labor Relations* provided their appreciation of the research skills acquisition and development.

The Organizational Cluster demonstrates three research skills in human resources management statements were acquired and developed by apprentices: Organizational Goal's Achievement (n=40, 56%), Management Decision Support (n=32, 45%), and Business Plan (n=29, 41%). The second group of research skill in human resources management statements obtained by apprentices through the experiential learning were EEO Law Compliance (n=27, 38%), Benchmarking (n=26, 36%), and High Performance Work Practices (n=24, 34%). Therefore, the research skills statements focus on High Performance Work Practices (n=22, 31%), Benchmarking (n=20, 28%), Scientific-Base Approach (n=19, 27%) illustrate complex management concepts to apprentices and should be accentuate in the advance undergraduate courses in human resources management. Further, gaps that currently exist in among the human resources professionals population also point to the need for increase exposure to business acumen and strategic thinking development opportunities to apprentices. The main factors influencing the acquisition and development of research skills is based on the experiential learning activities emphasizing the strategic implications of a dynamic human resources management environment, and the fundamentals issues related with the organizational external influences, global environment and equal employment opportunity compliance.

Chart 2 demonstrates the perceptions from undergraduate business students on the acquisition and development of Workforce Planning Research Skills Cluster. The main research skills development are Methods of Collecting Job Analysis Information (n = 39, 56%), Human Resources Audit (n = 39, 56%), Strategic Planning (n = 38, 54%), and Talent Management Process (n = 29, 41%). Furthermore, Workforce/Talent Analytics and Data Mining (n=27, 38%) and Data Mining (n= 27, 38%) represent the two research skills that shows a similar trend on the Workforce Planning Cluster. The recognition and the necessity for field experience to analyze human resources data and statistical analysis offered through internships and cooperative education by the College of Business Administration during the fourth year of study explains this trend and responds to the 21st century organization request and skills gap of labor pool.

The College of Business Administration professors have been recognized by their achievements and intellectual






contributions such as academic administration in higher education, business education, entrepreneurial environment, finance environment, strategic management, and industrial management. Also, the Research Center at the College of Business Administration supports laboratory research process for faculty, students, and administrative staff.

Chart 3 reveals the predominant appreciation of acquisition and development from apprentices on the Human Resources Management Skills Cluster. The predominant research skills are Evidence-Based Human Resources Management (n=38, 54%), Statistical Analysis (n=38, 54%) reveal the advantages receive from the inclusion of experiential learning on the instructional design and significance to apprentices be aware of the human resource planning and job analysis in the contemporary organization. This trend demonstrate the experiential learning allowed the apprentices enrolled in the introductory course in human resources and labor relations course to understand the importance of the usage of metrics to categorize the results considering the strategy and objectives of the organization. The appreciation develops by apprentices such as Human Resources Methods (n= 34, 48%), and Human Resources Trends and Metrics Strategic-Based Metrics (n=34, 48%), Benefits of Metrics (n=28, 40%) sustains the general learning goals from the *Introductory to Personnel and Labor Relations* course. The apprentices should able to identify the research metrics, also describe the interrelationship among human resources management functions, and the role of Human Resources Professionals in developing high performance work organizations.

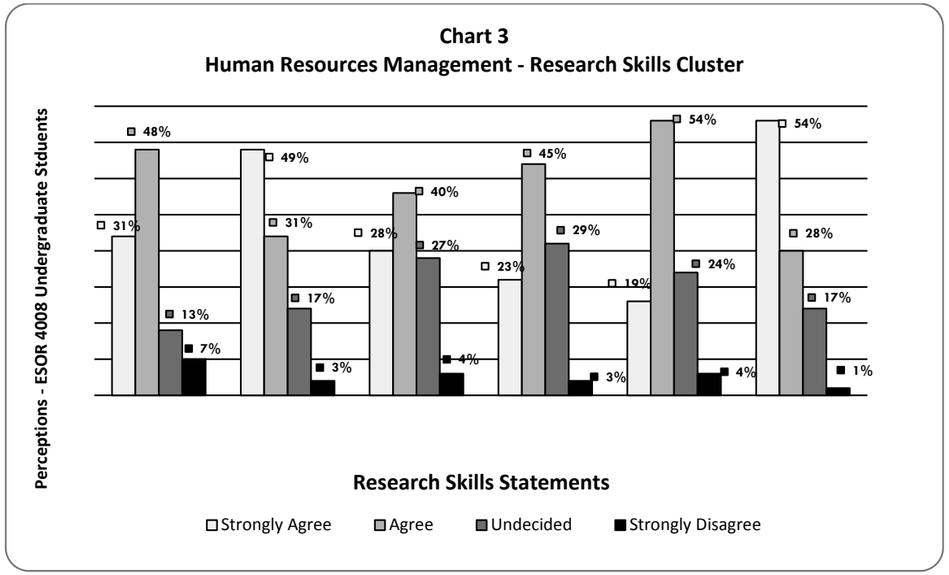
## CONCLUSIONS AND IMPLICATIONS

Findings of the research are that undergraduate students enrolled in the *Introduction to Personnel and Labor Relations* have defined evaluation as the integration of both description and judgment, in which statements description emphasizes the objective part of the assessment, and the judgment parts dwells on its subjective aspects. The 19-item instrument provides a means for potentially enhancing the objectivity of the descriptive part of the evaluation. The questionnaire results found significant evidence of the acquisition and development of research skills using several experiential learning techniques. The data obtained from this study can serve as both summative assessment of apprentice's acquisition of specific research skills during the experiential learning activities designed through the *Introduction to Personnel and labor Relations* course.

This study revealed the engagement in research experiences from undergraduate business students as well as formative feedback regarding which research skills they have acquired, and which require further improvement. Consequently, experiential learning holds great potential








in learning that is occurring. Future research could examine the dynamics between the student and teacher interaction. With the changing demographics and more international students and minorities entering post-secondary education, more research is needed on the learning styles of human resources management students. Further development and empirical research on implementation, it nevertheless provides a conceptual platform from which to explore additional complex areas on the acquisition and development of research skills in human resources management considering the influence of learning style and delivery.

## REFERENCES

Czaja, J.A., & Rauckhorst, W.H. (2002). Creating a research-rich curriculum. Retrieved November 12, 2012 from www.pkal.org/documents.miamiohio.pdf.

Dessler, G. (2013). *Human Resources Management*. Englewood Cliff, NJ: Prentice-Hall, Inc.

Dewey, J. (1987). My pedagogic creed. *The school journal*. LIV(3):77-80.

Dohm, A. and Lynn Shniper. 2007. Occupational employment projections to 2016. Monthly Labor Review. November. http://www.bls.gov/opub/mlr/2007/11art5full.pdf

Hakim, T. 1998. Soft assessment of undergraduate research: reactions and student perceptions. Council of Undergraduate Research Quarterly : 189-1192.

Hathaway, R., Nagda, B. and Gregerman, S. 2002. The relationship of undergraduate research participation to graduate and professional education pursuit: an empirical study. Journal of College Student Development: 43: 614-631.

Kardash, C.M. 2000. Evaluation of an undergraduate research experience: perceptions of undergraduate interns and their faculty mentors. Journal of Educational Psychology 92(1) 191-201.

Kolb, A. & Kolb, D. A. (1984) *Experiential Learning: Experience as the Source of Learning and Development*. Englewood Cliff, NJ: Prentice-Hall, Inc.

Kolb, A. & Kolb, D. A. (2005) The Kolb Learning Style Inventory – version 3.1 2005 Technical Specifications, Retrieved September 21, 2012 http://www.learningfromexperience.com

Lewis, L.H., & Williams, C.J. (1994). Experiential learning: Past and present. In L/ Jackson & R. S. Caffarella (Eds.), *Experiential learning: A new approach* (pp. 5-16). San Francisco: Jossey-Bass.

Sharma, A.D. & Dika, S.L. *Experiences in Implementing a Quality Culture at the University of Puerto Rico – Mayagüez,* Ponencia presentada en la Octava Conferencia Internacional de Educación Superior Basada en

Tecnología de la Información y Adiestramiento (por sus siglas en ingles, ITHET 2007), Kumamoto, Japón, Julio, 2007.

Society for Human Resource Management. (2008, February). *SHRM 2007 Symposium on the Workforce Readiness of the Future U.S. Labor Pool: Executive Summary.* Alexandria, VA: Author

Valkeavara, T. (1998). Human resource development roles and competencies in five European countries. *International Journal of Training and Development* 2(3): 177-179.

www.astd.org/Certification/Competency-Model. Accessed: 15 March 2013.

Ulrich, D. (Speaker). (2012). "HRCS 2012 Overview and Domains." [Video]. The RBL Group. http://rbl.net/index.php/library/display-content-page/1484.

# Can Taking an IB Course Change Students' Attitudes towards International Affairs and Welfare of Other Countries?

**Prasad Vemala**
Assistant Professor of Management
School of Business
Robert Morris University
Moon, Pennsylvania

**Jim (Jiun-Shiu) Chen**
Associate Professor of Management
College of Business
McNeese State University
Lake Charles, Louisiana

**Susie S. Cox**
Associate Professor of Management
College of Business
McNeese State University
Lake Charles, Louisiana

## ABSTRACT

*Americans in general tend to pay less attention to international affairs than their counterparts around the world. Therefore, Americans know much less about international affairs and lack international knowledge than people in other countries (Ivengar & Morin, 2006). As we move to high levels of globalization on all fronts, we must confront our lack of knowledge and how we might remedy this problem. So, we aim to analyze if completion of a course in international business increases students' attention to international affairs and changes students' attitude toward other countries and their welfare. The results suggest that while taking an international business course does increase students' attentiveness on international affairs, students' attitudes towards other countries and their welfare did not significantly change.*

## INTRODUCTION

With the accelerating pace of globalization, the barriers of global trade have been declining and the world is becoming more interdependent (imf.org, 2008). Global competition is growing with greater intensity. Few companies can avoid global competition; even if they want to stay domestic. In order to compete in this environment, companies need to secure a competent workforce with international knowledge, skill and perspective to succeed in the global environment (Shin, 1997). Cross-culturally competent workers, especially managers, are high in demand (Saghafi, 2001).

In response to the rising opportunities and challenges of globalization, educational institutions recognize the importance of increasing students' ability to be effective in a global economy (Fugate & Jefferson, 2001). The AACSB (The Association to Advance Collegiate Schools of Business) accreditation standards requires schools to "prepare graduate for careers in the global context" (2003, p. 9). Specifically, 2013 AACSB accreditation standards addressing undergraduate students' learning experiences state that programs should include "skills related to diverse and multicultural work environment (able to work effectively in diverse environment)" and knowledge of "economic, political, regulatory, legal, technological, and social contexts of organizations in a global society"(p. 9). Also, it is recommended that MBA students should have learning experiences related to managing in global context and that specialized master programs should include learning experiences related to "applying specialized knowledge in a global context" (p. 3).

Educational institutions wishing to obtain and remain accredited have embraced this challenge to prepare business students for the international marketplace. Internationalizing the curriculum is seen by many as an effective means to provide students with the competencies required by this changing environment. Particularly in business

schools, the efforts to internationalize the curriculum are intensifying (Saghafi, 2001). One course of action to internationalize the curriculum is to require students to take a global component infused course or international business related course. The assumption is that after completing an international business course, students will gain international knowledge and skill, and broaden their view on global issues. As more colleges of business choose to add international business courses to the curriculum, it is important to understand whether or not taking an International Business course can change the awareness on global issues. Various studies have examined the effects of an internationalized curriculum on students' global perceptions. Most of the previous studies have focused on attitudes toward whether completing an international business (IB) course changed student attitudes regarding international issues. However, these studies have not examined empirically as whether students will pay more attention to international affairs after taking IB course and whether students' attitudes toward other countries and their welfare have been affected by exposure to international business infused courses.

The primary goals of this study are to identify if completing a course in international business increase students' attention to international affairs and if completion of the international business course changes students' attitudes toward other countries' welfare? In part, this paper aims to examine the existing state of the business curriculum internationalization. The paper is organized as follows. The next section will discuss existing literature and research questions are provided. The third section describes the data used in this study. The fourth section explains the results and offers practical implications.

## LITERATURE REVIEW AND RESEARCH QUESTIONS

Anecdotal evidence and findings from academic research demonstrate a lack of knowledge about global issues. For example, Curran, Lyengar, Lund, Salovarra & Moring (2009) found that compared to Europeans, fewer Americans could identify the Taliban even though the United States fought against Taliban in Afghanistan for several years. The lack of attention given to international affairs and lack of knowledge on international affairs is not surprising given that Americans tend to pay less attention to international affairs than their counterparts around the world. Consequently, students in America know very little about international affairs and lack international knowledge compared to people in other countries (Ivengar & Morin, 2006).

Internationally oriented curriculum has become a critical element of business education (Fugate & Jefferson, 2001). Various studies have examined the impact of internationalization of the business curriculum. Most of the previous research dealing with student attitudes and international business courses has focused on whether students' attitudes toward international issues change after completing an international business course. The results of these studies generally have been positive. Mpoyi & Thomas (2008) found that studying an international business course would increase international related knowledge. Their research also found that an international business course encouraged students to recognize the need to have knowledge on global issues. Thompson (1973) found that students' taking coursework with global content increased their international knowledge and affected their attitude toward globalization and free trade. Walton and Basciano (2006) identified that ethnocentrism is higher for students who did not take an international business course compared to the students who took an IB course. Saghafi (2001) found internationalization of the university curricula created more cross-culturally competent and less ethnocentric students. Margavio, Hignite, Moses, & Margavio (2005) showed that students that took an IB course exhibited more cultural empathy than those who had not had taken an IB course. Others studies found that study abroad programs increase students' intercultural sensitivity (Anderson, Lawton, Rexeisen & Hubbard, 2006; Gillespe, 2002; Patterson, 2006; Vande Berg, 2001). Patterson (2006) found that study abroad is better than traditional classroom experience to increase students' intercultural sensitivity.

However, some studies offered different outcomes. Brasfield, McCoy, & Reed (2011) found that while students gained international knowledge after taking an International Business course, no change was observed on student's attitude towards other nations. In their study, they examined the effects of global business curriculum on student attitudes. After completion of the course, students indicated that they were more likely to invest in foreign countries and were willing to do business with foreign businesses. Students' view on globalization became more positive but their attitudes toward other cultures and social lives did not change.

However, few researchers have examined whether students show more concern about international issues and care more about the welfare of other countries. To offer additional insight into the effectiveness of IB courses, this research is based on the following premises. Because international business courses cover issues such as cultural, political, economic, and legal issues across many countries, it is likely that students will develop interest in current events and become more attentive to the international news. Also, students will have more concern for other counties and their people. Therefore, we suggest that taking an IB course will increase students' interests in international affairs, and increase their tendencies to follow what's going on outside of the United States. In addition, we further suggest that this exposure to the global environment and cultural differences may help to shift students' views from not only just accepting their own country's well-being but also be concerned about well-being of people living in other countries as well. Below are the two research questions we examine in this study.

R1: Does taking an International Business course increase a student's interest in international affairs?

R2: Does taking an International Business course increase a student's concern for other countries and their welfare?

## METHOD

The authors carried out the research at an AACSB accredited college of business in one university, in which students are required to take an introduction to international business course during their sophomore year. The content covered in the course includes globalization and international institutions, differences in political economies, cultural differences, ethics in international business, theories of international trade, the political economy of international trade, foreign direct investments, the foreign exchange market, the international monetary system, the strategy of international business, and the complexities of entering foreign markets.

### Participants

Students were emailed a link to an online survey at the beginning of the semester and again towards the end of the semester. The pre-course survey and the post-course survey had the same set of questions and aimed to identify if students' attitude towards global awareness and internationalism had changed because of their exposure to the topics covered in the International Business course. The survey was collected in the fall of 2012 and in the spring of 2013. While 150 students took the pre-survey, only 121 students took the post-survey. As a result the final sample in this study is 121 with total responses being 242 (including time 1 and time 2).

From the 121 participants who responded to both the pre-course and post-course surveys, about 39% of the students are male and the rest of the students (61%) are female. Roughly, 15% (19/121) of the students surveyed responded that they had lived in other countries. However, interestingly more than 50% of the students (66/121, 54.5%) noted they had traveled to another country, while others responded that they had not. While 30% of the respondents reported to speak a foreign language, 44% reported that they have close friends from other countries. The majority of the students have had at least one class with an international faculty member at some point in their college career. Also a majority of the respondents were between the ages of 19 and 23. The average age of the respondents was 21.5 years (*s.d.* 3.16).

### Measures

The authors developed a survey (see Appendix) to request demographic information and responses to 12 statements presented in a Likert-type seven-point scale. The statements were written to determine whether the international business course changed students' attitudes toward other countries' welfare and concern for international affairs. For the first research question, four items were used to measure the change in the students' attentiveness to international affairs. A factor analysis using principal components with Varimax rotation yielded one factor with eigenvalues over 2.0. A reliability analysis yielded Cronbach's alpha of 0.9.

For the second research question, a measure of internationalism was used to assess the concern for other countries' welfare. Kosterman and Feshback (1989) define internationalism as "international sharing and welfare, and reflects an empathy for the peoples of other countries" (p. 271). Balabanis, Diamantopoulos, Mueller, and Melewar (2001) also suggest that "internationalism focuses on one's concern about other nations' welfare." It is considered as a more active attitude than cultural openness, which is considered as a reactive experience and reception or no refusal of foreign culture and people (Sharma, et al., 1995). Sharma et al. (1995) found that internationalism was negatively related to consumer ethnocentric tendencies. Their finding is consistent with the results of Baughn and Yaprak (1996) who found that consumers with a higher degree of internationalism are less likely to have economic nationalism. Internationalism was measured by using Kosterman and Feshbach's (1989) eight-item scale (Cronbach's alpha = .85) which included statements such as "If necessary we ought to be willing to lower our standard of living to cooperate with other countries in getting an equal standard for every person in the world". Data analysis and results are explained next.

### Data Analysis and Discussion

To perform the data analysis on the responses of the subjects from the pre- course survey and post-course survey, T-tests were conducted. T-tests are used to illustrate if significant differences exist between the pre-course and post-course responses of each participant. In this research paper, we specifically aim to analyze if significant differ-

**TABLE 1**
**PAIRED SAMPLES T-TEST RESULTS**

| | Paired Differences | | | | | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|---|
| | Mean | Std. Dev. | Std. Error Mean | 95% Confidence Interval of the Difference Lower | Upper | | | |
| Pair IA1-IA2 | -.45 | .89 | .08 | -.60 | -.29 | -5.58 | 120 | .00** |
| Pair INT1-INT2 | -.06 | .69 | .06 | -.18 | .06 | -.91 | 120 | .37 |

** Sig at 0.05 level. IA – International Affairs and INT–Internationalism

ences are present in the participants' attentiveness about international affairs and if there is a significant change in subjects' concern about the welfare of other countries before and after taking an international business course. The results as shown in Table 1 demonstrate that while students' attentiveness over global affairs did improve significantly after taking the course, students' attitude towards the welfare of other countries, defined as Internationalism remained the same with no significant differences noted. Since the significance level of internationalism is greater than 0.05, it can be deduced that although the participants are willing to pay more attention to the global affairs (significance of 0.00) after taking the course, they tend to have the same attitude towards the welfare of the foreign countries.

Although one may expect that taking an IB course may increase a student's concern over international issues or welfare of other countries, the results of this study provide evidence otherwise. The results are consistent with the work of Brasfield, McCoy, & Reed (2011), which identified that while students did gain international knowledge after taking the course, their views on culture and social lives of foreign countries did not change. This finding reinforces that it is difficult to change attitudes of students concerning the welfare of other countries.

Since significant differences exist between time 1 and time 2 for our first research question, we further explored each of the survey questions (see Appendix) on International Affairs to identify if this holds true to every question and not just on aggregate level. Survey questions 1 and 2 emphasized more on whether taking an International Business course made students more interested in accessing and enjoying international news now than before taking the course and if they are more involved in finding out what is happening in the world. The results of this investigation are reported in Table 2 does in fact display that taking an IB course did increase a student's interest in finding out more about the global world. Survey questions 3 and 4 stressed more on whether students are particularly more concerned about global issues now than prior and if they are willing to immerse themselves in other cultural environments. The results clearly illustrate that students are more concerned about the global issues and are interested to be part of the bigger world than they were before taking the international business course.

## CONCLUSION

This study does offer support for colleges of business initiatives to offer international business courses as part of the general business curriculum. However, the results

**TABLE 2**
**INTERNATIONAL AFFAIRS ITEM ANALYSIS RESULTS**

| Items | Pre-Course | Post Course | Difference | Probability |
|---|---|---|---|---|
| 1. I pay attention to international news or what is going on in the world | 3.81 | 4.26 | 0.45 | .00** |
| 2. I enjoy getting news from all over the world | 4.18 | 4.59 | 0.41 | .00** |
| 3. World issues concern me more than the issues of any one country. | 3.49 | 4.04 | 0.55 | .00** |
| 4. I like immersing myself in different cultural environments | 4.26 | 4.46 | 0.38 | .00** |

** Sig at 5% level





suggest that taking one IB course did not significantly change the students' views over concerns for the welfare and well-being of other countries. One practical implication that can be taken from this study and other studies on international business education is that to truly prepare students to be global managers and business people, additional efforts are needed. Culture and attitudes are slow to change. Given that the course is only 15 weeks in duration, the fact that some change in student attitudes could be noted is promising. Future research should focus on other opportunities that students may have to increase their global knowledge and experience. It may be suggested that students be exposed to either more international business infused courses or programs such as study abroad or internships in foreign countries. Also, since majority of our participants are under 25 with little work experience, they have limited exposure to the outside world and worldly experiences. Encouraging students to take advantage of global opportunities including working with diverse groups of people may help them develop a more global view of the world and the issues faced by all.

## REFERENCES


Anderson, P., Lawton, L., Rexeisen, R., & Hubbard, A. (2006). Short-term study abroad and intercultural sensitivity: A pilot study. *International Journal of Intercultural Relations, 30*, 457-469.

Balabanis, G., Diamantopoulos, A., Mueller, R. D. & Melewar, T. C. (2001). The impact of nationalism, patriotism and internationalism on consumer ethnocentric tendencies. *Journal of International Business Studies*, *32*(1), 157-175.

Brasfield, D. W, McCoy, J. P., & Reed, M. P. (2011). Effect of global business curriculum on student attitudes. *Business Education Innovation Journal*, *3*(2), 73-81.

Curran, J., Iyengar, S., Brink, A., & Salovaara-Moring, I. (2009). Media System, Public knowledge and democracy: a comparative study. *European Journal of Communication*, *25*(5), 5-22.

Gillespe, J. (2002). Colleges Need Better Ways to Assess Study abroad Programs. *The Chronicle of Higher Education*, July 5, 2002.

IMF.org. (May, 2008). Globalization: A Brief Overview. Retrieved from http://www.imf.org/external/np/exr/ib/2008/053008.htm

Ivengar, S., & Morin, R. (July 5, 2006). Mind the Gap: Differences in Public Knowledge about Domestic and Overseas Events. *The Washington Post*.

Fugate, D., & Jefferson, R. (2001). Preparing for globalization–Do we need structural change for our academic programs. *Journal of Education for Business, 76*(3), 160-166.

Kosterman, R., & Seymour F. (1989). Toward a Measure of Patriotic and Nationalistic Attitudes. *Political Psychology*, *10*(2), 257-274.

Margavio, T., Hignite, M., Moses, D., & Margavio, G. W. (2005). Multicultural effectiveness

assessment of students in IS courses. *Journal of Information Systems Education, 16,* 421–428.

Mpoyi, R., & Thomas, R. (2008). International business education: an empirical examination of the impact of curriculum coverage on student knowledge of global issues. *Review of Business Research, 8*(5), 174-178.

Patterson, P. (2006). Effect of study aboard in intercultural sensitivity, Unpublished Doctoral Dissertation.

Saghafi, M. (2001). Impact of international business education on ethnocentricity. *Journal of Teaching in International Business*, *12*(4), 63-81.

Sharma, S., Shimp, T. A., & Shin, J. (1995). Consumer Ethnocentrism: A Test of Antecedents and Moderators. *Journal of the Academy of Marketing Science, 23*(1), 26-37.

Shin, T.G. (1997). Team Training. *International Business*, 10(7), 12-14.

Thompson, F. (1973). The Interaction of Cognition and Affect: The Issue of Free Trade. *Journal of Economic Education, 4*(Spring), 111-115.

Vande Berg, M. (2001). The assessment of learning outcomes in study abroad. *International Educator, 10*(2), 31.

Vande Berg, M., Connor-Linton, J., & Paige, R. M. (2009). The Georgetown Consortium Project: Interventions for Students Learning Abroad. *Frontiers: the Interdisciplinary Journal of Study Abroad*. Vol. XVIII, 1-75.

Walton, J., & Basciano, P. (2006). The internationalization of American business education:

Are U.S. students less ethnocentric? *Business Review, 5,* 282–286.

Yoon, S-J., Cannon, H. M., & Yaprak, A. (1996). Evaluating the CYMYC cosmopolitanism scale on Korean consumers. Advances in International Marketing, *7,* 211–223.

| Appendix<br>Survey Instrument | |
|---|---|
| **International Affairs (Yoon et al., 1996)** | |
| 1 | I pay attention to international news or what is going on in the world |
| 2 | I enjoy getting news from all over the world |
| 3 | World issues concern me more than the issues of any one country |
| 4 | I like immersing myself in different cultural environments |
| **Internationalism (Kosterman & Feshback, 1989)** | |
| 5 | If necessary, we ought to be willing to lower our standard of living to cooperate with other countries in getting an equal standard for every person |
| 6 | The alleviation of poverty in other countries is their problem, not ours |
| 7 | America should be more willing to share its wealth with other suffering nations, even if it doesn't necessarily coincide with our political interests |
| 8 | We should teach our children to uphold the welfare of all people everywhere even though it may be against the best interests of our own country |
| 9 | Children should be educated to be international minded to support any movement, which contributes to the welfare of the world as a whole |
| 10 | The agricultural surpluses of all countries should be shared with the "have not's" of the world |
| 11 | The position a U.S. citizen takes on an international issue should depend on how much good it does for how many people in the world, regardless of their nation |
| 12 | Countries needing our agricultural surpluses should pay for them instead of getting something for nothing |

# A Test of Learning Concepts: Teaching Business Integration to the Freshman Business Student Learner via Podcasting

**Richard Muller, MSS.**
Instructor
Marketing Department of the Beacom School of Business
University of South Dakota
Vermillion, South Dakota

**Rand Wergin Ph.D.**
Assistant Professor
Marketing Department of the Beacom School of Business
University of South Dakota
Vermillion, South Dakota

## ABSTRACT

*The research in this paper is designed to discover if the use of supplemental instruction through the use of podcasts enhance learning for students in a business school environment. Specifically, previous experience in an entry level Survey of Business class suggested that topics regarding the integration of the business disciplines have been difficult for the freshman and sophomore learner. A review of the literature shows that research does not address this specific problem, nor propose any solutions. Thus, a series of podcasts were developed for the purpose of emphasizing the integrative nature of the business disciplines.*

*These podcasts were provided to one section of Survey of Business students, while a similar section acted as control, and did not have access to the podcasts. However, the concept of integration was taught in both sections. An assessment of one multiple choice question on each of three interim exams, and an essay question on the final exam was used to reveal whether the supplemental delivery of content via podcasting influenced student learning. Results from this research indicated a correlation between student success and use of podcasts.*

The authors would like to thank Christopher Boyd for his assistance with an earlier draft of this paper.

This research was partially funded by a grant from the Beacom Opportunity Fund at the University of South Dakota.

## INTRODUCTION

Business educators face many challenges in the classroom today. These challenges include providing an "enterprise integrated" educational environment, and adapting to the changing learning styles and needs of the current student. First, the concept of business integration (BI) suggests that business students should have a broad knowledge of each functional area of business, and an expertise in their training. For example, it is important that accounting students receive training that would allow them to pass the CPA exam if the student so chooses, but it is equally important that the accountant understands the functional importance of finance, marketing, and management. In the same way, human resources majors should be experts in their field, but also be able to communicate with their partners in each functional area and so insure progress toward the firm's goals.

A second challenge to business educators today is the changing learning styles and needs of the current student. Students now want and expect to have mobile computing used in the curriculum (Barak, Lipson, & Lerman, 2006). Students carry laptops, smart phones and tablets to school. Anecdotal evidence gleaned via a short walk through a student union or business school lobby reveals the level of technology carried by students today. Thus, it is up to the business professor to determine how to effectively integrate this technology into the classroom.

This research addresses both challenges and seeks to determine if podcasting has a positive influence on freshman and sophomore business students' understanding of

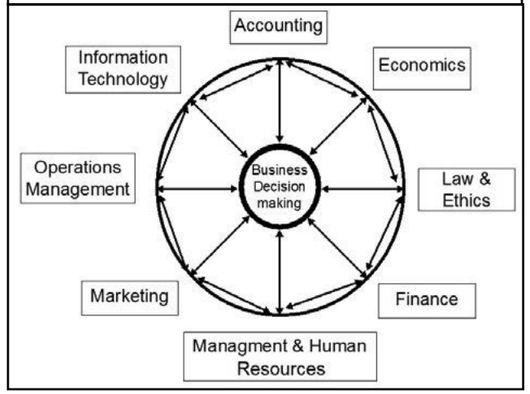
BI. Business integration is defined as the decision making process through close and seamless coordination between business functions, including departments, groups, organizations, and systems. The students in this research are from a Survey of Business class at a Midwestern university. The average student at this point in their academic career knows little about business and its inner-workings, and one of the learning objectives of this course is to provide an integrated perspective of business. The curriculum attempts to show the student that business integration is the combination of business processes into an integral whole, which requires an understanding of business functions and how those functions fit together for the purpose of making business decisions. In other words, the new business student will understand how each part of a company works together to accomplish a task and progress toward achieving the firm's objectives. For example, the curriculum shows the student that there are times when the marketing department must be able to work with legal, finance, and accounting at the same time.

## LITERATURE REVIEW

Podcasting is a method of delivering multimedia files over the internet using Really Simple Syndication (RSS) for playback on mobile devices and personal computers (Beldarrain, 2006). RSS can be a powerful tool for educators in that every time new content is uploaded to a source, such as blog or classroom web page, that same content could automatically download to the users listening device. Educators can consider this feature a "video on demand" offering for the students. Moreover, these play both audio and video files. Students indicate that they like podcasts as supplemental instruction for they are empowering, portable, motivating and easy to use (Rosell-Aguilar, 2007; Salmon & Nie, 2008). Students see that podcasts are replacing real lectures and classroom discussion (Hatch & Burd, 2008), but they also see it as a tool to facilitate two-way communication between the students and the professors (Harris & Park, 2008), and they prefer using various technologies while studying (Saeed, Yun, & Sinnappan, 2009). As such, research has shown that podcasts increased overall GPA, decreased absenteeism, and decreased withdrawal rates among the students involved in a podcast using class (Parslow, 2009; Preuss, 2008).

Since students are enthused and indicate they love podcasts (Kardong-Edgren & Emerson, 2010), This study uses podcasts that were developed and produced with the assistance of a faculty member (Brittain, Glowacki, Van Ittersum, & Johnson, 2006), resulting in five podcasts that speak towards the different areas of business integration: Legal / Business Law, Finance, Marketing, Management, and Production / Operations Management. Each of these podcasts was performed by professors in their respective field. The podcasts were generally not longer than seven minutes in length. Thus, these podcasts were designed to address the two distinct challenges faced in the Survey of Business classroom; that is, to effectively teach the concepts of business integration while at the same time including podcasting technology in an effort to reach and teach the freshman learner.

**FIGURE 1**
**BUSINESS INTEGRATION MODEL**




## METHODOLOGY

This study compares the learning outcomes of students enrolled in the first year business course. These students are freshman and sophomore students who generally know very little about business, including an understanding of the roles of the various business disciplines, and more importantly, how those distinct disciplines interact. These podcasts were recorded, produced, and edited by students in the business school to specifically address the seven of the eight learning goals of the course. Each podcast is a recording of a professor from a business discipline (Marketing, Finance, etc.) discussing their discipline and its integrative relationship to the business enterprise. The podcasts contained relevant information regarding business integration between different disciplines, and the running time of each podcast was about seven minutes. The study consisted of two different groups, a control classroom, of thirty-nine students who did not have access to the podcasts, and a test group of thirty-six students who were provided the podcasts as a part of the classroom presentations. The students were made aware at the beginning of the semester that a study was being completed and data would be collected. No private or demographic information was collected. The two sets of classes had the same amount of class time, both met on the same campus and in the same building on Monday, Wednesday, and





Friday for fifty minutes. Both classes received class lecture time on the concept of business integration and both were taught the same curriculum on the subject. Other than different instructors, the classes were similar.

The comparison tests between the two classes were conducted four times during the semester. The first three comparisons were conducted via multiple choice questions on the first of three common exams for the course. The final comparison was conducted via a three-part essay question on the final exam. The multiple choice test items were electronically graded, while the final exam question for both groups was evaluated by a single graduate student using a rubric. The three multiple-choice questions are:

- **Multiple Choice Question One from the first exam:**
  _____ is the process of coordinating the business functions and the understanding of how they fit together for the purpose of making business decisions.
  A. Contingency Management.
  B. Management by Objective.
  C. Business Integration.
  D. Strategic Planning
- **Multiple Choice Question Two from the second exam:**
  As owner of your company, you are considering expansion. Two options you might explore would be leasing a building or buying a building. You ask your Finance Officer to explore the options. Your Finance officer is likely to talk to:
  A. Accounting and CEO.
  B. CEO, Marketing and Legal departments.
  C. Operations, Marketing and Accounting.
  D. Accounting, Marketing, Legal, Operations, HR, IT.
  E. Accounting, Stockholders, Board of Directors, CEO
- **Multiple Choice Question Three from the third exam:**
  Frito-Lay company is launching an ad campaign for a new flavored corn chip. The Marketing Team wants to measure the impact and effectiveness of the campaign. Which company departments would likely be involved in the analysis?
  A. H.R. and Production.
  B. Finance and Management.
  C. Marketing and Accounting.
  D. Legal and Info. Technology.
  E. All of the above

The three part essay question was included in the Final Examination for both groups.

> Bug-Be-Gone, Inc., a major manufacturer of pesticides, sells its products through retailers and directly to consumers through the Internet. Its product line consists of premium quality pesticides, herbicides, fungicides, and related applicators and safety equipment. Due to forecasted changes in rainfall Bug-Be-Gone, Inc. expects that sales could decline by at least 10% each year over the next five years. Its management team is meeting to address the forecasted decline in rainfall.

- Name the different functional areas of business/ business disciplines we have studied in class that will be impacted by the forecasted decline in rainfall? (5 points available)
  A. Identify and describe a strategic decision you recommend to Bug-Be-Gone's management to adapt to the forecasted change. (5 points available)
  B. Describe how your recommended strategic decision impacts each of the functional business stated in Part "A". (10 points available)

Part A requires the recall of at least five of the eight business disciplines or functional areas covered in class for 5 points. Part B requires creating a strategic solution for 5 pts. Part C is worth 10 points, and requires an application of the strategy outlined in Part B to the functional areas recalled in Part A. The following rubric was applied to insure consistent grading of the essay responses in both courses.

| (points) | **Part A:** |
|---|---|
| 0 | no attempt |
| 1 | stated "all of the areas" without supporting information |
| 2 | "all of the areas" areas with limited supporting information |
| 3 | one or two areas identified with limited supporting information |
| 4 | three-four areas identified with supporting information |
| 5 | five or more areas listed with supporting information |

| (points) | **Part B:** |
|---|---|
| 0 | no attempt |
| 1-2 | non-strategic (tactical) actions |
| 3 | weak strategic action identified limited support |

4 strategic action identified and limited support
5 strategic action identified and supported

(points) **Part C:**

0 no attempt
1-4 "all of the areas" with limited supporting information
5-6 2 areas identified with limited support
7-8 3 areas identified and supported
9-10 4 or more areas identified and supported

## RESULTS

All the students took the first and second exams, two students from the podcasting class did not take the third exam, and thirty-five students from the podcasting class and twenty-three from the control class took the final exam. The significant difference in class size between the two groups at the end of the semester may be anecdotal evidence supporting Preuss' (2008) finding that podcasting decreased absenteeism and withdrawal rates.

The results from the three multiple-choice questions indicate that the podcasting class had higher scores than the control group. The first question indicated a statistically significant (Pearson Chi-Square 13.196, p=0.001) The between the groups where 86% of the podcasting students answered the first multiple choice question correctly while 46% of the control group answered the first question correctly. The second multiple-choice question is a more challenging question, and fewer students from both classes answered the question correctly, yet the podcasting group continued to score significantly higher than the control group (Pearson Chi-Square 10.308, p=0.001). The podcast class had a 50% pass rate, while the control class had a 15% pass rate on the second question. The third multiple-choice question again showed a statistical difference between the two groups (Pearson Chi-Square 3.946, p=0.047. The podcast group had a 62% pass rate on the third question, while the control group had a 38% pass rate. Thus, the three multiple-choice questions showed a difference between the two groups consistently through the semester. See the appendix for a table of the results.

The results from the final essay question are similar to the results from the three multiple-choice questions in that the class using podcasts generally scored higher on the final exam than the control class. The essay question is divided into three parts. Part A is worth five points, and asks the student to list the functional areas of the firm. A t-test comparing the mean scores for both classes indicated that the students' scores on Part A are not significantly different (means of 3.34 and 3.42, p=0.73, df 41). Part B is also worth five points, and asks the student to identify the strategic decision faced by the firm. A t-test comparing the mean for both classes also indicated that the scores are not significantly different (means of 4.13 and 4.31, p=0.45, df 41). Part C is the final portion of this essay question, and it is worth ten points. It asks the student to apply their understanding of how the decision will impact each of the functional areas of the business. A t-test of means between the two classes did find a difference between the groups, where the podcasting group scored significantly higher on the question than the control group (means of 5.96 and 8.59 p<0.00, df 38). The different degrees of freedom for the three parts is due to one or two students not answering one of the sections of the question, thus dropping them out of the statistical analysis.

## DISCUSSION AND CONCLUSION

The results of this study indicate that podcasting does have an effective, positive influence on freshman business learners regarding the topic of business integration. The results from the first multiple choice question show a strong difference between the two classes. The podcasting class had viewed one podcast from Legal / Business Law at this point in the semester. Interestingly, the first exam had the strongest difference between the two groups as indicated by ϕc (Hair, Black, Babin, Anderson, & Tatham, 2006). The second exam included a podcast from Finance, and showed a significant difference between the groups, but the strength of that difference was slightly less. The third exam included two podcasts, one from Marketing and the other from management, and that exam again showed a difference between the two groups, but that difference was not a robust. Finally the last podcast covering Production / Operations Management was viewed prior to the comprehensive final exam. The order of podcasting presentation follows the order of the business disciplines covered in the text.

The second phase of the research confirms that both groups had acquired a basic understanding of business integration. At this time, all five podcasts were viewed by the podcasting class. The gap between the two groups grew smaller on the second and third exams, and that trend was also seen in the results of the first two items from the final exam essay question. The mean scores from parts A and B reveal that both groups are equivalent in their understanding of the basic concepts of business integration, but the results from part C indicate that the podcasting group was more able to assimilate and apply that knowledge, suggesting higher order learning. Thus, this one semester experiment supports three concepts. First, podcasting can be an effective supplemental instructional learning method. Second, the effectiveness of the podcasts appears to be stronger as an introductory tool. Third, podcast learning can be valuable in improving a student's ability to apply and evaluate business integration concepts.

## WEAKNESSES AND FUTURE RESEARCH

While this study indicated that podcasting does have a positive influence on learning, it still leaves some questions unanswered. First, the control and experimental groups were taught by two different instructors. Every effort was made to make the classes similar in content and information delivery. The curriculum, lesson plans, and tests were all similar. The main difference is that the students in the experimental class were exposed to the podcasts as a supplement to lecture. Yet the influence of two different instructors cannot be estimated. Further research is warranted using the same instructor for both the control and experimental classes.

Second, this research did not include out-of-class podcasting. RSS and podcasting allows for students to download content from various sources and view that content at their own leisure. This study exposed the students to the podcasts as part of the classroom instruction. There is the opportunity for further research, including assessing the effectiveness out-of-class viewing viewing the podcasts multiple times, and the impact of student selected media devices in retention.

Third, this study looked exclusively at a single concept. Further research is warranted to determine if other concepts lend themselves to podcasting, and moreover, if some content is best not delivered via podcasts. In the same way, this study ignores whether some business disciplines are more obvious in the ways they integrate with the rest of the business. For example, learners may see that accounting is naturally more integrated than operations, and thus teaching accounting integration is easier than teaching operations integration.

Fourth, the podcasts in this study were developed by students for students. The level of production quality was good, the picture and audio were of good quality, but these podcasts were not professional studio quality. Also, the podcasts were simply "talking heads" of the professors. There were no supporting graphics, sound or music to reinforce learning. McLuhan (1964) suggests that the quality and format of the media may have an influence on the effectiveness of the message. Since the production levels of the podcasts were minimal, a test of podcasts using more advanced production techniques is warranted.

In the end, this study does show that there is relationship between student success and use of podcasts. This study of business integration found that students who used podcasts were more successful than those who did not. Additionally, the application of the business integration concepts by students was shown to be more effective in the group that had exposure to the podcasts by virtue of the results of the graded essay question. In both instances, the results of this research demonstrate a positive correlation between student learning and the application of podcast technology.

**Appendix**
**Cross Tabulation results for the three multiple-choice test questions.**

| Multiple Choice-Q1 | | | |
|---|---|---|---|
| (count) | Fail | Pass | Total |
| iPod group | 5 | 31 | 36 |
| control group | 21 | 18 | 39 |
| | 26 | 49 | 75 |
| | | | |
| (percent) | Fail | Pass | Total |
| iPod group | 14% | 86% | 48% |
| control group | 54% | 46% | 52% |
| | 35% | 65% | |
| | | | |
| (expected) | Fail | Pass | Total |
| iPod group | 12.5 | 23.5 | 36 |
| control group | 13.5 | 25.5 | 39 |
| | 26 | 49 | 75 |
| Pearson's $\chi 2 = 13.196$, 1df, $p = .001$ | | | |
| $\phi c = .419$ | | | |

| Multiple Choice-Q2 | | | |
|---|---|---|---|
| (count) | Fail | Pass | Total |
| iPod group | 18 | 18 | 36 |
| control group | 33 | 6 | 39 |
| | 51 | 24 | 75 |
| | | | |
| (percent) | Fail | Pass | Total |
| iPod group | 50% | 50% | 48% |
| control group | 85% | 15% | 52% |
| | 68% | 32% | |
| | | | |
| (expected) | Fail | Pass | Total |
| iPod group | 24.5 | 11.5 | 36 |
| control group | 26.5 | 12.5 | 39 |
| | 51 | 24 | 75 |
| Pearson's $\chi 2 = 10.308$, 1df, $p = .001$ | | | |
| $\phi c = .371$ | | | |

| Multiple Choice-Q3 | | | |
|---|---|---|---|
| (count) | Fail | Pass | Total |
| iPod group | 13 | 21 | 34 |
| control group | 24 | 15 | 39 |
| | 37 | 36 | 73 |
| | | | |
| (percent) | Fail | Pass | Total |
| iPod group | 38% | 62% | 47% |
| control group | 62% | 38% | 53% |
| | 51% | 49% | |
| | | | |
| (expected) | Fail | Pass | Total |
| iPod group | 17.2 | 16.8 | 34 |
| control group | 19.8 | 19.2 | 39 |
| | 37 | 36 | 73 |
| Pearson's $\chi 2 = 3.946$, 1df, $p = .047$ | | | |
| $\phi c = .233$ | | | |

## REFERENCES


Barak, M., Lipson, A., & Lerman, S. (2006). Wireless laptops as means for promoting active learning in large lecture halls *Journal of Research on Technology in Education 38*(3), 245-263.

Beldarrain, Y. (2006). Distance Education Trends: Integrating new technologies to foster student interaction and collaboration. *Distance Education, 27*(2), 139-153.

Brittain, S., Glowacki, P., Van Ittersum, J., & Johnson, L. (2006). Podcasting Lectures. [Article]. *EDUCAUSE Quarterly, 29*(3), 24-31.

Hair, J. F. J., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate Data Analysis* (6th ed. Vol. 6). Upper Saddle River, NJ: Pearson Prentice Hall.

Harris, H., & Park, S. (2008). Educational usages of podcasting. [Article]. *British Journal of Educational Technology, 39*(3), 548-551. doi: 10.1111/j.1467-8535.2007.00788.x

Hatch, A., & Burd, L. (2008). Augmenting Learning Through Filmed Interviews and Screencasting. *Proceedings of the 9th Annual Conference of the HEA Information and Computer Sciences Subject Centre*, 71-76.

Kardong-Edgren, S., & Emerson, R. (2010). Student Adoption and Perception of Lecture Podcasts in Undergraduate Bachelor of Science in Nursing Courses. [Article]. *Journal of Nursing Education, 49*(7), 398-401.

McLuhan, M. (1964). *Understanding Media: The Extensions of Man* London and New York: New American Library

Parslow, G. R. (2009). Commentary: Downloaded Lectures Have Been Shown to Produce Better Assessment Outcomes. [Opinion]. *Biochemistry & Molecular Biology Education, 37*(6), 375-376. doi: 10.1002/bmb.20346

Preuss, M. (2008). Instructional Podcasting in Higher Education: Rockingham Community College Pilot Study, from http://www.podcasting123.com/080410PdcstsummFINAL.pdf

Rosell-Aguilar, F. (2007). Top of the Pods–In Search of a Podcasting "Podagogy" for Language Learning. [Article]. *Computer Assisted Language Learning, 20*(5), 471-492. doi: 10.1080/09588220701746047

Saeed, N., Yun, Y., & Sinnappan, S. (2009). Emerging Web Technologies in Higher Education: A Case of Incorporating Blogs, Podcasts and Social Bookmarks in a Web Programming Course based on Students' Learning Styles and Technology Preferences. [Article]. *Journal of Educational Technology & Society, 12*(4), 98-109.

Salmon, G., & Nie, M. (2008). Doubling the Life of iPods. In G. Salmon & P. Edirisingha (Eds.), *Podcasting for Learning in Universities* (pp. 1-11). Maidenhead, England: Open University Press, McGraw-Hill Education.

This is page is intentionally blank.

# Group Projects with Millennials: The Question of Not Why...But How

**Catherine Kendall**
Associate Professor
Department of Interior Design
University of Tennessee at Chattanooga
Chattanooga, Tennessee

**Jessica Etheredge**
Assistant Professor
Department of Interior Design
University of Tennessee at Chattanooga
Chattanooga, Tennessee

**Dana Moody**
Associate Professor/Department Head
Department of Interior Design
University of Tennessee at Chattanooga
Chattanooga, Tennessee

**Ashley Cooper**
Graduate Student
Department of Psychology
University of Tennessee at Chattanooga
Chattanooga, Tennessee

## *ABSTRACT*

*The ability to work in groups is fundamental to education and professional environments. Today's classrooms are predominately filled with Millennials who have been working in teams their whole lives. Millennials enjoy group work because it is perceived as more fun and gives them a sense of unity and collaboration; unfortunately, it also gives them a way to avoid risks (Alsop, 2008). So, how do characteristics and learning styles of Millennials affect group work? As educators generally stemming from the Baby Boomer and Gen X generations, many instructors are either unaware or misinformed on effective grouping strategies for Millennials. This paper explores the fundamentals differences of Millennials and how they translate into strategies for successful group work.*

## INTRODUCTION

Today's higher education classrooms are predominately filled with Millennials. But who are Millennials and what are their predominant attributes? A quick search of Wikipedia shows that Millennials, also known as Gen Yers, are generally the children of Baby Boomers and Gen Xers. They are an ethically diverse generation "who are team players, optimistic, confident, trusting of authority, rule followers, achievers in school, and generally achievement oriented in everything they do" (Boston College Center for Work & Family, n.d.). Since the ability to work in groups is a fundamental component within classrooms of higher education and the professional environment, it would appear that Millennials would fall naturally into place with group work since they are accustomed to working in teams (Deloitte, 2009; Gursoy, Maier & Chi, 2008; Raines, 2002). They have been working in teams throughout their K-12 experience. Although Millennials enjoy group work because it is perceived as more fun and gives them a sense of unity and collaboration, it also gives them a way to avoid risks (Alsop, 2008). These characteristics and others affect how Millennials learn and work in groups. As educators stemming from the Baby Boomer and Gen X generations, many instructors are either unaware or misinformed on effective grouping strategies needed for Millennials. This paper explores the fundamental traits of Millennials and strategies to harness these traits for successful group work.

## FUNDAMENTAL TRAITS

According to Howe and Strauss (2000), in their canonical *Millennials Rising: The Next Generation,* seven distinguishing traits define Millennials: Special, Sheltered, Confident, Team-oriented, Conventional, Pressured, and Achieving. To understand these traits, we must also understand how the traits were created. In general, Millennials are a product of the parents, educators, legislators, and general culture that collaborated to create a more child-centric society that spawned the *no-child-left-behind* era, where every child was valuable (Pattengale, n.d.). But we must look deeper into the traits of this generation to understand them fully.

### Special

There is no doubt that the general culture, parents, and students believe that Millennials are unique, but the parents of this generation are defined by their children. Parents of Millennials waited until they achieved financial security to have children and then went to great pains with fertility treatments to conceive them (Pattengale, n.d.). Hence, Millennials were greatly anticipated by their parents. This focus of the Baby Boomer generation on their children created a strong sense of self-worth in Millennials that developed into an attitude of entitlement and a perceived unwillingness to work hard and pay their dues (The Futures Company, 2011).

### Sheltered

Millennials are exposed to everything through popular media, which makes it tempting to think that they are tough, hardened individuals that can take on the world. In fact, we must remember that Millennials grew up in a sheltered life, defined by the 1990's youth safety movement and a dense structure of new regulations that guarded them (Wilson & Gerber, 2008). Spawned out of this structure came a plethora of helmets, pads, car seats, and "Baby on Board" signs, that led to a generation that was highly "buckled, watched, fussed over, and fenced in by wall-to-wall rules and chaperones" (Howe & Strauss, 2000). Although well meaning, the outcome of this sheltered lifestyle leans Millennials toward risk aversion (Pattengale, n.d).

### Confident

As a generation, Millennials are an upbeat and positive bunch that is often dubbed as the sunshine generation (Howe & Strauss, 2000). Surveys show that 72% are happy in general with life and 90% are happy and excited about what the future holds (Noveck & Tompson, 2007; Pattengale, n.d). Millennial's use of analytical skills for long-term decision-making has been used to explain the turn around of previously negative behaviors from previous generations (Pattendale, n.d.), but more recent events such as the financial crises and inter-locking economies have lead to slightly fading results (Wilson & Gerber, 2008). Either way, this trait fills the halls of higher education with predominantly self-assured students.

### Team-oriented

As mentioned in the introduction of this paper, Millennials have a natural affinity for team orientation that developed from the likes of an unassuming purple dinosaur named Barney, high participation in team sports, use of school uniforms, and classroom emphasis on group work. (Howe & Strauss, 2000). They like teamwork, but prefer to collaborate and work in teams with their generational peers (Lancaster & Stillman, 2002; Skiba, 2006; Nicholas & Lewis, 2008). For them, life is best understood in communal categories and the message of "not letting a friend down" (Pattengale, n.d.). Millennials think group work is fun. Group work provides them with a sense of unity and collaboration, but also gives them a way to avoid risks (Alsop, 2008). Relationships are important and technology is used to support this value (Pattengale, n.d.). Research suggests their preference for group work stems from how they like to socialize in groups more than previous generations (Howe & Strauss, 2007). Their work style also supports their team-oriented approach. Millennials need to work in a social environment, often one that would appear to some as chaotic. They are good at multitasking and understand how to employ technology productively, and as a result, can produce good work at what appears to be last minute (Heskett, 2007).

### Pressured

Raised by helicopter, workaholic parents in a struggling economy, Millennials have internalized the message that they have to maintain high GPAs, participate, and build strong resumes. Statistics also show that "people graduating during the recession years earned $100,000 less in cumulative net present-value earning" (The Futures Company, 2011). Bureau of Labor Statistics shows a 14% unemployment rate in recent student graduates of higher education. That is the highest level since the Great Depression. This combined with the mid-2010 facts that 37% had no job, internship rates have dropped 28% since 2008, and 23% had quit looking for work, it's no wonder that Millennials feel pressure (The Futures Group, 2011). The three biggest concerns for Millennials are grades, resumes, and landing a job. A positive note of this trait is that the pressure has led Millennials to a commitment in





planning. They often have 5 and 10 year plans for their life.

### Achievement

As mentioned above, Millennials are planners. Howe and Strauss (2000) state that they have big plans, particularly about their careers. Where their Baby Boomer parents had interest in accomplishment in arts and humanities and were internally driven, Millennials are more rationalistic (Howe & Strauss, 2000). This means that while Millennials are willing to put work into projects, they do not expect to gain insight or personal transformation from school (Wilson & Gerber, 2008). Routine multitasking may have also shortened their attention spans and caused them to lack critical thinking skills (Murray, 2004; Nicholas & Lewis, 2008). Nonetheless, Millennials are intelligent. Their SAT scores are the highest since 1974 (Pattengale, n.d.). They are smart and they know it, but they look for accomplishments both outside and inside the classroom. "Millennials may not place as much value on "work" as their supervisors have, but they may find themselves accommodating the demands of the workplace and behaving more like Baby Boomers once they become committed to particular projects and goals" (Myers & Sadaghiani, 2010).

### Conventional

Born into a divorce culture, Millennials are intensely aware of the fragile nature of family and hence feel that the idea of "Family" is key (Wilson & Gerber, 2008). They are a generation comfortable with rules and regulations since they have been surrounded by them throughout their life. They feel that the rules of their parents, teachers, and coaches make their life easier. They embrace activities that reinforce and support their family values and think that someday they can apply them to "run the show" much better (Howe & Stowe, 2000). Tim Clydesdale (2007) goes on to state that Millennial students in higher education default to familiar American cultural standards embraced by their parents rather than resisting them, thereby suppressing their core identities and not often allowing for demonstration of their own creativity and ability. But others think that the embrace of Boomer parent values and team dynamics have not created a reversal of individualism but a contemporary manifestation of it, a type of "hyper-individualism on steroids" (The Futures Company, 2011).

## STRATEGIES

The complex set of fundamental traits outlined by Howe and Strauss (2007) stand as excellent points of departure for the creation of pedagogy in higher education that supports and mentors the needs of the Millennial generation. Many of the traits that Millennials have can be very positive, but they also hold a "shadow side" that must be addressed. For example, confidence should be encouraged, but guarded against becoming arrogance (Howe & Strauss, 2007). So, what perspectives on organizational relationships and performance can be offered so that successful pedagogies for group projects can abound? Strategies include: structure, leadership and guidance, measures, and engagement. The collaborative learning of group projects, actually works towards building the character trait of *Confidence* within Millennials.

### Structure

Millennials require strict structure to perform on group projects successfully. As educators, we often have a tendency to create more loosely organized group projects, and hence Millennials become frustrated and often fall apart. Many educators have written off these students as deficient, lazy, or unmotivated. This perception often comes from the fact that older generations were brought up in a more open-ended system full of exploration. How the Millennials handle loosely organized group work ties into two of Howe and Strauss's (2000) fundamental traits: *Sheltered* and *Achievement*. With respect to *Sheltered*, this trait goes much deeper than just meaning that Boomers overprotected their children. In fact, Millennials came through their K-12 and other societal experiences in an environment of strict rules and regulations. They expect the same kind of structure in the organization of group projects and do not have time for the open exploration we experienced. Their world is objective driven and broken down into modules. Providing a purposeful group project with multiple manageable individual phases could help support the structured character makeup of Millennials.

The issue of how to formulate class groups in the classroom setting is often unclear for instructors. Overall, the students were open to the idea of working collaboratively to complete tasks; however, multiple students expressed concerns relating to how the groups were formed. Employing organized groups of students is imperative in developing successful groups (Katzenbach, Entel & Mahony, 2002). Two known methods are documented for determining group membership: self-selection and assignment. The chief characteristic of self-selection allows students to choose who is in their group (James, McInnis, & Devlin, 2002). Carnegie Mellon University (CMU) published an article that observed the natural tendency of students, who were allowed to choose their own groups. Students leaned towards forming groups that were "homogenous with respect to ability and culture... (which) often resulted in strong teams and weak teams"(CMU, n.d.). There-

fore Rau and Heyl (1990) believe that allowing students to choose their group members is most appropriate for "... trial or ungraded sessions. These temporary groups allow students to get to know others in the classroom." (see also Kendall & Moody, 2011)

When instructors assign members to a group, their choices can be intentional, random, or on the basis of a criterion selection (CMU, n.d.; Rau & Heyl, 1990). If an instructor chooses to intentionally group students, Katzenbach et al. (2002) stated that complimentary skills should be the strongest building block for designing a group. On the other hand, CMU suggests grouping students by motivation in order to prevent students with a motivated work ethic from being responsible for students with a weaker work ethic (CMU, n.d.). Random assignment of students to a group is simply grouping students without a specific method or pattern. This technique can be effective; however it creates a strong possibility for "free-riders" who take advantage of the work of others (Rau & Heyl, 1990). Criterion-based selections are typically used when instructors want to group students based on ability because a test or examination are used to gauge student's aptitude (Rau & Heyl, 1990). Both Rau and Heyl (1990) and CMU (n.d.) believe all the afore mentioned grouping strategies to be effective; however prior knowledge, skill, role, diversity and size are all important factors that should be considered when forming groups (Kendall & Moody, 2011).

Apart from selecting the type of method to use with regard to group formation in collaborative projects, the group size should be considered. There are benefits and negative consequences associated with the number of members in each group. Problems arise when groups are too large. Large groups make it hard to ensure that all students participate and contribute equally within the group (Raul & Heyl, 1990). Member expectations and/or member roles can also become blurred and lack clear direction (Russ & Dickinson, 2008). Katzenbach et al. (2002) noted a "herding" effect that affects large groups, a reference to a large group whose vision becomes unclear and/or settles on vague statements of purpose because of a lack of clear direction or leadership. In contrast, forming groups that are too small can create a lack in experience among members, a lack of diversity, or a lack of varying thinking styles (Raul & Heyl, 1990). Raul & Heyl (1990) suggest that the formation of permanent groups helps to maintain consistency and stability among group members (Kendall & Moody, 2011).

### Leadership and Guidance

Millennials have been nurtured throughout their lives with constant coaching and feedback and they expect it to continue in the classrooms of higher education. Providing this guidance keeps Millennials engaged in their work. Millennials need to be taught how to handle personal interaction and conflict. For them, life is best understood in communal categories and messages that emphasize "not letting a friend down", which are more effective than messages directed toward self-interest (Pattengale, n.d.). Also, help them democratize their group. Ask them to elect a group leader and structure the project with a business-like hierarchy, where group members report to group leaders, and group leaders report to the boss.

Alasdair Macintyre stated in his article entitled *After Virtue: A Study in Moral Theory* (1984) that in the world today "the language of morality" is in a state of grave disorder" so much that we only have a "simulation of morality." Given this societal problem, the issue of ethics must become a prominent feature of any class. Millennial characteristics of *Special*, *Confident*, and *Achievement* oriented are attributes "that can easily move towards excessive, self-absorption and even narcissism (Wilson & Gerber, 2008). Millennials also have a high regard for their groups and are more likely to turn this regard inward, creating a "tribal" focus that can devalue respect for set canon of behavior with regard to ethics (Hersch, 1999). "When coupled with cultural relativism and egocentrism, that are the birthright of young students everywhere, such self-and group-esteem can powerfully separate our pupils from their consciences" (Wilson & Gerber, 2008). Therefore, rigorous attention to the ethics of learning must be openly communicated.

### Measures

The high *Achievement* characteristic of Millennials makes them extremely interested in their grades. Howe and Strauss (2000) state that Millennial students are fearful of grades and failing. Today's students "want to know how their grades stand throughout the semester and are accustomed to this sort of frequent feedback in most of the aspects of their lives.... They insist on having a transparent grade-checking system that is continually updated" (Wilson & Gerber, 2008). A very easy way to incorporate this point-of-service style is to use an educational program such as Blackboard Learn, a learning management system that puts grades and assignments on-line and at student fingertips. Such systems reinforce the Millennial characteristic of *Achieving* since the inline assignment grading feature enables instructors to "view assignments and provide feedback within the web browser" (Blackboard, 2013). The addition of SafeAssign, an add-on offered to Blackboard users, allows plagiarism within written components of projects to be detected. "In addition to acting as a plagiarism deterrent, it also has features designed to aid in educating students about plagiarism and importance of proper attribution of any borrowed content" (Blackboard, 2011). Quizzes can also be created in Blackboard that allow students to test their knowledge on practice exams and verify understanding before taking an in-class exam in class (Blackboard, 2013).

With regard to actual grading, instructors are faced with the difficult challenge of grading group work fairly. In their article entitled, *Assessing Group Work,* James et al. (2002) provided two suggestions for grading group work fairly. They suggest providing two grades: one grade for the overall group and one grade for each individual in the group. The need for an individual grade is vital to Millennials because of their *Achievement* characteristic. They look for ways to pull ahead of the crowd. Besides that fact, "work-products of the group are largely individual (and) each member has strong individual accountability to his or her task" (Katzenbach, 2002). The individual grade component helps avoid the logistical problems of the "free-rider" phenomenon and non-contributing group members. Further support for providing individual grades and how they can produce personal accountability among students was shown in the Carnegie Mellon University article. There is also the issue of student overestimation of the quality of the work done. Too often, the Millennial *Achievement* characteristic impels them to overestimate the value of their efforts and appeal for top grades (Wilson & Gerber, 2008) (Kendall & Moody, 2011).

### Engagement

Millennials are more focused on meaningful work (Boston College Center for Work and Family, n.d.) Their learning and communication style is through multi-media. The common method of contact is text messaging and instant messaging, as well as cell phones. Trying to stimulate the learning process for the generation that grew up with the internet is a challenge. Millennials are said to be experiential, engaging, and interactive (Nicolas, 2008). They "want to work quickly and creatively, and they want to do it their way" (Zemke, Raines, & Filipezak, 2000).

Millennials have grown up with vast choices in their lives and education. They think that it is their birthright to have them. Wilson and Gerber (2008) suggest that it is a good idea to let Millennials have "input into the design of their projects, grading systems or rubrics, and teamwork activities" (Wilson & Gerber, 2008). Palloff and Pratt (2001) follow that instructors should have set guidelines for the class overall, but allow some flexibility and room for negotiation. Wilson and Gerber (2008) go on to advocate for the tradition of student-centered learning. All of the above information addresses multiple fundamental characteristics of Millennials such as *Special*, *Confident*, and *Achievement*.

## CONCLUSION

The ability to work in groups is a fundamental component to any educational or professional environment (Colbeck, Campbell, & Bjorklund, 2000); however, this statement is especially applicable to earlier generations teaching students of today. Millennials are more adept at managing in a changing, global, and networked environment. They will do it with great emphasis on teamwork, facility with use of technology, and sensitivity for needs of balance in life and work (Heskett, 2007). Millennials are high maintenance, high risk, and often high output individuals (Heskett, 2007), but the most crucial point of understanding the characteristics of the Millennial generation is often lost in more complex cultural and societal dynamics (Howe & Strauss, 2007). "That point is simply, our students are not entirely like us.... What is generally true for others our own age, is not necessarily true of the generation of students that now make up our undergraduate population" (Howe & Strauss, 2007). Instructors must understand what makes their students "tick," in order to create efficient and effective group projects in the classrooms of higher education.

## REFERENCES


Alsop, R. (2008). *The trophy kids group up: How the Millennial generation is shaping up the workplace.* San Francisco: Jossey-Bass.

Blackboard Inc. (2013). *BlackBoard learn: Products.* Retrieved from: http://www.blackboard.com/Platforms/Learn/Products/Blackboard-Learn.aspx

BlackBoard Inc. (2011). *About SafeAssign.* Retrieved from: http://wiki.safeassign.com/display/SAFE/About+SafeAssign

Boston College Center for Work and Family (n.d.). *Creating tomorrow's leaders: the expanding roles of Millennials in the workplace,* Executive Briefing Series. Retrieved from http://www.bc.edu/content/dam/files/centers/cwf/pdf/BCCWF%20EBS-Millennials%20FINAL.pdf

Carnegie Mellon University (CMU, n.d.). *Creating student groups, enhancing education*. Retrieved from http://www.cmu.edu/teaching/designteach/teach/instructionalstrategies/groupprojects/creatingstudentgroups

Clydesdale, T. (2007). *The first year out: Understanding American teens after high school*. Chicago: The University of Chicago Press.

Colbeck, C., Campbell, S., & Bjorklund, S. (2000). Grouping in the dark. *Journal of Higher Education*, 71(1), 60-83.

Deloitte (2009). *State of the media democracy survey.* Retrieved from http://www.deloitte.com/view/en_US/us/Industries/media-entertainment/media-democracy-survey/index.htm?id=us_furl_tmt_general_tmt-trends_mainushp_031913#&panel1-1

The Futures Company (2011). *Millennials in crisis: What team dynamic and the crisis of chrysalis mean for marketers.* Retrieved from http://thefuturescompany.com/free-thinking/millennials-in-crisis/

Gursoy, P., Maier, T., & Chi, C. (2008). Generational differences: An examination of work values and generational gaps in the hospitality workforce. *International Journal of Hospitality Management, 27*, 458-488.

Hersch, P. (1999). *A tribe apart: A journey into the heart of American adolescence.* New York, NY: Ballantine Books.

Heskett, J. (2007). *How will Millennials manage? HBS Working Knowledge.* Retrieved from http://hbswk.hbs.edu/item/5736.html

Howe, N. & Strauss, W. (2000). *Millennials rising: The next great generation*. New York, NY: Knopf Doubleday Publishing Group.

Howe, N. & Strauss, W. (2007). *Millennials go to college: Strategies for a new generation on campus. (2nd ed.).* Great Falls, VA: Lifecourse Associates.

James, R., McInnis, C., & Devlin, M. (2002). *Assessing group work.* Melbourne University. Retrieved from http://www.cshe.unimelb.edu.au/assessinglearning/03/group.html

Katzenbach, J., Entel, T., & Mahony, K. (2002). Team dynamics. *Interior Design Handbook of Professional Practice.* New York, NY: The McGraw-Hill Companies, Inc.

Kendall, C. & Moody, D. (2011). *Teamwork means never having to blame yourself: A look at improving group projects within the interior design curriculum*. Paper presented at the Interior Design Educators Council: Design with Intelligence, Denver, Colorado. http://www.idec.org/documents/idec-2011-proceedings-web-version.pdf

Lancaster, L. C. & Stillman, D. (2002). *When generations collide.* New York: HarperCollins Publishers, Inc.

MacIntyre, A. (1984). *After virtue: A study in moral theory (2nd ed.).* Notre Dame, IN: University of Notre Dame Press.

Murray, J. (2004). Nursing: The next generation. *Nursing Education Perspectives 25*(3), 106.

Myers, K. & Sadaghiani, K. (2010). Millennials in the workplace: A communication perspective on Milennials' organizational relationships and performance. *Journal of Business and Psychology 25*(2), 225-238

Nicholas, A. & Lewis, J. (2008). Millennial attitudes toward books and e-books. *The International Journal of the Book*, *5*(2), 81-92.

Novek, J. & Tompson, T. (2007). *Poll: Family ties key to youth happiness*. The Associated Press. Retrieved from http://www.washingtonpost.com/wp-dyn/content/article/2007/08/20/AR2007082000451.html

Palloff, R. & Pratt, K. (2001). *Lessons from the cyberspace classroom: The realities of on-line teaching.* San Francisco: Jossey-Bass.

Pattengale, J. (n.d.). *Millennials & the work experience.* Grant County Growth Council, Innovative Network and the Human Resources Association. Retrieved from http://www.inpathways.net/millennials.pdf

Raines, C. (2002). *Connecting generations: The sourcebook for a new workplace.* Berkley, CA: Crisp Publications.

Rau, W. & Heyl, B. (1990). Humanizing the college classroom: Collaborative learning and social organization among students. *Teaching Sociology, 18* (2), 141-155.

Russ, R. & Dickinson, J. (2008). Collaborative design: "Forming, storming, and norming". *Journal of Interior Design*, *25* (2), 52-58.

Skiba, D. (2006). The Millennials: Have they arrived at your school of nursing? *Nursing Education Perspectives 25*(6), 370-371.

Wilson, M. & Gerber, L. (2008). How generational theory can improve teaching: Strategies for working with the Millennials. *Currents in Teaching and Learning, 1*(1), 29-44.

Zemke, R., Raines, C., & Filipezak, B. (2000). *Generations at work: Managing the clash of veterans, boomers, xers, and nexters in your workplace.* New York: Amacon.

# Self-Assessment and Student Improvement in an Introductory Computer Course at the Community College Level

**Jama Spicer-Sutton**
Associate Professor
Computer Science/Information Technology
Sevier County Campus
Walters State Community College
Sevierville, Tennessee

**Dr. James Lampley**
Associate Professor
Educational Leadership and Policy Analysis Department
East Tennessee State University
Johnson City, Tennessee

**Donald W. Good**
Professor, Educational Leadership and Policy Analysis Department
East Tennessee State University
Johnson City, Tennessee

## ABSTRACT

*The purpose of this study was to determine a student's computer knowledge upon course entry and if there was a difference in college students' improvement scores as measured by the difference in pretest and post-test scores of new or novice users, moderate users, and expert users at the end of a college level introductory computing class. This study also determined whether there were differences in improvement scores by gender or age group. The results of this study were used to determine whether there was a difference in improvement scores among the three campus locations participating in this study.*

*Four hundred sixty-nine students participated in this study at a community college located in Northeast Tennessee. A survey, pretest, and post-test were administered to students in a college level introductory computing class. The survey consisted of demographic data that included gender, age category, location, Internet access, educational experience and the self-rated user category, while the pretest and post-test explored the student's knowledge of computer terminology, hardware, the current operating system, Microsoft Word, Microsoft Excel, and Microsoft PowerPoint.*

*The data analysis revealed significant differences in pretest scores between educational experience categories. In each instance, the pretest mean for first semester freshmen students was lower than second semester freshmen and sophomores. The study also reported significant differences between the self-rated user categories and pretest scores as well as differences in improvement scores (post-test scores minus pretest scores). However, the improvement scores (post-test scores minus pretest scores) were higher than the other self-rated user categories. Of the three participating campus locations, students at Location 1 earned higher improvement scores than did students at Location 2. The results also indicated that there was a significant difference between the types of course delivery and course improvement scores (post-test scores minus pretest scores). The improvement scores for on ground delivery was 5 points higher than the hybrid course delivery. Finally, study revealed no significant differences according to the gender and age categories.*

## INTRODUCTION

College level computing skills are useful tools that serve students throughout their college career. However, many students enter college lacking necessary computing skills. While many students might be proficient in locating information online through search engines, less is known about the use and application of specific types of software often found in business and industry. As a result of this lack of knowledge, all students entering the participating community college must prove computer competency ei-

ther by taking a competency exam or by the completion of a college level introductory computing class. Approximately 97% of the students chose to take the introductory class to satisfy this competency requirement. Assessment methods used to evaluate students in the introductory class included hands-on project tutorials, a research paper, and multiple-choice quizzes.

The purpose of this study was to determine a student's computer knowledge upon course entry and if there was a difference in college students' improvement scores as measured by the difference in pretest and post-test scores of new or novice users, moderate users, and expert users at the end of a college level introductory computing class. This study also determined whether there were differences in improvement scores by gender or age group. The results of this study were used to determine whether there was a difference in improvement scores among the three campus locations participating in this study.

This study focused on student improvement in a college level introductory computing class using a pretest and a post-test at the participating community college. The assessment of the pretests and post-tests and the results of these tests were the criterion variables for the study. These independent variables included: gender, age, campus location, prior higher education experience, residential Internet access, and user's self-rated computer skill level.

## RELATED LITERATURE

Within the literature, definitions of computer literacy have varied from author to author. Often, individuals' actual task-specific computer skills and their perceived computer skills do not coincide (Dettori, Steinbach, & Kalin, 2006). According to Messineo and DeOllos (2005), higher level of experience with forms of technology produced more confidence. However, it was suggested that with advanced applications, the confidence level and the exposure level was lacking. Incorrect assumptions are sometimes made by faculty members regarding studentpreparedness to take the introductory computer science class.

The term computer literacy has also varied throughout the years. For example, what we understand as computer literacy has assumed different names and meanings since the 1980s. Definitions were influenced by various theories. The National Science Foundation (NSF) hosted a conference in 1980 to discuss the meaning of the term "computer literacy" (Childers, 2003). Burniske (2000) stated that, "To prepare ourselves and our students for new types of literacy, we must be receptive to new definitions of the term itself" (p. 3). Burniske addressed two types of literacy. The first type of literacy was functional literacy. This concept was popularized by the United States Army during World War II. Functional literacy included the lowest functioning level of literacy and rarely required an individual to use problem-solving techniques. Functional literacy focused on teaching the basics of reading and writing. The second literacy type was critical literacy, which often referred to a learned individual with the ability to solve problems. This type of literacy comprised teaching the student learning to interpret and apply new information presented. Many researchers considered computer literacy a type of critical literacy. To integrate computer literacy, the instructor often blended traditional teaching with new technologies. In the classroom, teachers are often required to move beyond simply teaching a skill, such as keyboarding, to integrating computer skills within the core curriculum. This required the teacher to have a combination of a technical skill set and a theory based skill set. According to Burniske, if we are to achieve literacy-across-the curriculum, formal teacher training is required.

Computer skills considered necessary for computer literacy varied according to position. For instance, students assumed computer literacy if they could play games or word process a document, activities important to them, thus producing self-efficacy. Self-efficacy included one's belief in their skill for successful task completion. Individuals who reported high levels of self-efficacy tended to face difficult challenges more easily than others. Additionally, individual beliefs affected how persons felt, behaved, and motivated themselves (Bandura, 1997).

Technology skills assessments have taken many forms. For instance, Martin and Dunsworth (2007) proposed formative assessment of computer literacy at the university level to improve curriculum design of a computer literacy course. This formative assessment included the technological advances of the workplace as well as the technological needs of the student. Class observations, student test scores, student and teacher focus groups, and instructor surveys were tools used to collect the data. Four hundred forty-four students received a Likert-type survey through the Blackboard Course Management System in which 329 students responded. The researchers interviewed five focus groups comprised of 25 students as well as the 11 instructors who delivered the course. Five class observations also aided in data collection. The compiled data formed two categories: 1) what to teach, and 2) how to teach it. The findings reported both instructors and students rated Microsoft Office Skills, particularly Word and PowerPoint, as necessary. Additionally, both groups agreed that in class activities and hands-on projects were useful approaches when teaching computer literacy. Instructors and students stated that the Internet and the World Wide Web were considered important tools. However, students reported that online quizzes and extended lectures were not helpful, while instructors deemed them valuable





teaching tools and a means to measure student learning. Neither students nor instructors considered knowledge of computer hardware (input, processing, storage, and output) as a necessary skill. Instructors submitted that File Management was a needed skill, while students assigned a lower rating to this skill. Recommendations from the study included the need for more in class and hands-on activities, and collaborative activities that provided a group learning atmosphere.

Several higher education institutions adopted computer literacy requirements. For example, in 2010 Cape Fear Community College (CFCC) in North Carolina mandated that students prove computer competency to graduate. The students were presented with two options which satisfied competency requirements. They must have successfully passed the computer competency exam, a one hour exam, or have completed a designated college transfer computer course. If students chose the proctored competency exam, it was administered through Blackboard, a course management software application. In preparation for the exam, CFCC provided a computer competency tutorial and a computer competency practice exam for students (Cape Fear Community College, 2010).

## RESEARCH METHODOLOGY

### Research Questions

The following research questions guided this study:

1. Are there significant differences in students' pretest scores among the three college experience categories (freshman – 1st semester, freshman – 2nd semester, and sophomore- 1st and 2nd semester) in college level introductory computing classes?
2. Are there significant differences in students' pretest scores among the five types of self-reported residential Internet access (dial-up, cable, DSL, wireless and no Internet access) in college level introductory computing classes?
3. Are there significant differences in students' pretest scores among the three self-rated user categories (new or novice user, moderate user, and expert user) in college level introductory computing classes?
4. Are there significant differences in students' improvement scores (post-test scores minus pretest scores) among the three self-rated categories (new or novice user, moderate user, expert user) in college level introductory computing classes?
5. Are there significant differences in students' improvement scores (post-test scores minus pretest scores) among the three campus locations (Campus Location 1, 2, and 3) in college level introductory computing classes?
6. Are there significant differences in students' improvement scores (post-test scores minus pretest scores) among the three age categories (age 15-19, age 20-28, age 29 and older) as determined by gender in college level introductory computing classes?
7. Are there significant differences in students' improvement scores among the three self-rated user categories (new or novice user, moderate user, expert user) and the three age categories (age 15-19, age 20-28, age 29 and older) in college level introductory computing classes?
8. Are there significant differences in students' improvement scores (post-test scores minus pretest scores) among the course delivery types (on ground courses, online courses, and hybrid courses) in college level introductory computing classes?

### Population

Students from 26 sections of the introductory computer science course participated in the study. In each section, the instructor administered the pretest, post-test, and survey to those students who had chosen to participate. A total of 400 students, out of a potential 426, completed both the pretest and the post-test. The participating community college served ten surrounding counties with three campuses serving diverse populations. Students from three geographically unique campuses participated in this study. The campus locations in the study included: Location 1, centrally located; Location 2, located furthest southeast of the campuses; and Location 3, located furthest south. Because all course sections administered the pretest, post-test, and the survey, there was no skewing of the data by either the selection of a particular introductory computer science course or the time designation that each course was offered.

### Instrumentation

A group of Computer Science instructors at the participating college aided in the development of the pretest and post-test. The questions represented each unit studied throughout the course. Administration of the pretest and post-test were managed through the course management system and consisted of 100 questions. The questions incorporated the chapter units of the course, as follows: (a) Chapters 1-3, operating system; (b) Chapters 1-4, basic word processing; (c) Chapters 1-4, basic spreadsheet chapters; (d) Chapters 1 and 2, basic presentation software.

The student survey instrument contained various demographic questions. The independent variables included: gender, age, college experience, campus location, residential Internet access, and the user's self-rated computing skill level. The survey questions were comprised of multiple choice answers. One particular survey question regarding the user's self-rated computing skill level was of particular importance to this study. The question required the participants to read descriptions of each of three defined categories . They then selected the category that best described their computing skill level. The three selfrated categories were new or novice user, moderate user, and expert user. Because the demographic survey was optional, some students chose not to participate in this portion of the study or they completed only portions of the survey.

### Data Collection

The online course management system used in the study was Desire to Learn. The online course management system provided one central location for course materials, quizzes, surveys, calendars, and drop boxes for students to submit assignments with no installation of additional software required by the participants. The data provided for the study were collected through the course management system by a designee of the division dean.

In addition, a demographic survey was administered electronically along with the pretest .The demographic survey was developed with the assistance of the instructors in the Computer Science Department. Each instructor of the 28 participating course sections explained the purpose of the survey to each class and noted that student participation was optional. As with the pretest and post-test delivery, the demographic survey was administered electronically as part of the class through the course management system. Students logged in to the course management system and entered into their college level introductory computing class to take the survey located in the Surveys section of the course. If students chose to participate, students were then instructed to complete and submit the demographic survey questions electronically. Data provided by the students in the study were used only for the purposes of this study and the Computer Science Department of the participating community college. Pretest, post-test, and survey data were collected by a designee of the division dean to protect the anonymity of students who chose to participate in the study.

## RESULTS

### Research Question 1

A one-way analysis of variance was used to evaluate the relationship between students' pretest scores and the college experience of students enrolled in college level introductory computing classes. The dependent variable was pretest scores. The independent variable, college experience, had three levels: first semester freshmen, second semester freshmen, and sophomores – first and second semester. The ANOVA was significant, $F(2, 423) = 11.01$, $p < .001$. The effect size as measured by $\eta^2$ was small (.05). That is, 5% of the variance in students' pretest scores was accounted for by college experience.

Because the overall F test was significant, multiple post hoc comparisons were conducted to evaluate pairwise differences in the pretest means of the three groups. The Tukey post hoc test was used because equal variances were assumed, $F(2, 423) = .85$, $p = .430$. The Tukey procedure determined that there was a significant difference between first semester and second semester freshmen ($p < .001$) and between first semester freshmen and sophomores – first and second semester ($p = .020$). In each instance, the pretest mean for first semester freshmen students was lower. The pretest mean for first semester freshmen was over six points lower than the mean for second semester freshmen and over 3.5 points lower than the mean for sophomores – first and second semester. There was no significant difference between second semester freshmen and sophomores – first and second semester ($p = .322$).

### Research Question 2

A one-way analysis of variance was used to evaluate the mean differences in students' pretest scores among the five types of self-reported residential internet access. The dependent variable was the pretest scores. The independent variable, type of residential internet access, had five levels: dial-up; cable; DSL, wireless and no internet access. The ANOVA was not significant, $F(4, 421) = 1.48$, p = .209. The effect size as measured by $\eta^2$ was small (.01). That is, only 1% of the variance in pretest scores was accounted for by the type of internet access. The results indicated that the type of residential internet access did not significantly affect students' pretest scores.





### Research Question 3

A one-way analysis of variance was completed to evaluate the relationship between students' pretest scores and the self-rated user category in college level introductory computing classes. The dependent variable for this ANOVA model was the pretest scores. The independent variable, self-rated user category had three levels: new or novice user, moderate user, and expert user. The ANOVA was significant, $F(2, 422) = 40.74$, $p < .001$. The effect size as measured by $\eta^2$ was large (.16). That is, 16% of the variance in pretest scores was accounted for by self-rated user category.

Because the overall F test was significant, follow up tests to evaluate the differences among the pairs of pretest means were conducted. The Tukey post hoc test was used because equal variances were assumed, $F(2, 422) = .78$, $p = .459$. The Tukey procedure determined that all pairs of pretest means were significantly different at $p < .001$. In each pair of means evaluated, the lower the self-rated user level had the lower pretest mean. That is, the pretest mean for self-rated new or novice users was over 7.0 points lower than self-rated moderate users and almost 15 points lower than self-rated expert users. The pretest mean for self-rated moderate users was 7.4 points lower than self-rated expert users.

### Research Question 4

A one-way analysis of variance was completed to evaluate the relationship between students' improvement scores and the self-rated user category in college level introductory computing classes. The dependent variable was improvement scores. The independent variable, self-rated user category had three levels: new or novice user, moderate user, and expert user. The ANOVA was significant, $F(2, 372) = 15.54$, $p < .001$. The effect size as measured by $\eta^2$ was medium (.08). That is, 8% of the variance in improvement scores was accounted for by self-rated user categories.

Because the overall F test was significant, post hoc multiple comparisons were conducted to evaluate which pair of improvement score means was different. Levene's Test of Equality of Error Variances showed equal variances could not be assumed, $F(2, 372) = 4.33$, $p = .014$. Therefore, the Dunnett's C post hoc test was used to test pairwise differences. All three pairs of means were significant at the .05 level. Self-rated new or novice users' improvement score mean was 5.6 points higher than self-rated moderate users and 10 points higher than self-rated expert users. Moderate users' mean improvement was 4.5 points higher than expert users.

Research Question 5

A one-way analysis of variance was completed to evaluate the differences in students' improvement scores among the three campus location in college level introductory computing classes. The dependent variable was improvement scores. The independent variable, campus locations had three levels labeled: Location 1, Location 2, and Location 3. The ANOVA was significant, $F(2, 369) = 3.57$, $p = .029$. The effect size as measured by $\eta^2$ was small (.02) indicating that 2% of the variance in improvement scores was accounted for by campus location.

Because the overall F was significant, multiple post hoc comparisons were conducted to determine which pair of means was different. Dunnett's C was used because equal variances were not assumed, $F(2, 369) = 6.03$, $p = .003$. Dunnett's C showed there was a significant difference in improvement score means between Location 1 and Location 2. The improvement mean for Location 1 was 3.1 points higher than the mean for Location 2. No other pairs of means were significantly different.

### Research Question 6

A two-way ANOVA was used to determine if any significant differences in improvement scores between any of the three age categories. The ANOVA showed there was no significant age by gender interaction, $F(2, 370) = .536$, $p = .585$. The effect size as measured by $\eta^2$ was small (<.01) indicating that less than 1% of the variance in improvement scores was accounted for by age by gender interaction. There was no significant difference in the improvement score means among the age categories, $F(2, 370) = 2.966$, $p = .057$. The effect size as measured by $\eta^2$ was small (.02) indicating that 2% of the variance in improvement scores was accounted for by age. Finally, there was no significant difference in improvement score means between male and female students, $F(1, 370) = .489$, p = .485. The effect size as measured by $\eta^2$ was small (<.01). That is, less than 1% of the variance in improvement scores was accounted for by gender.

### Research Question 7

A two-way ANOVA was used to determine if there were differences in students' improvement score means based on age and self-rated user categories in college level introductory computing classes. The ANOVA showed that there was no significant two-way interaction between age by self-rated user category, $F(4, 366) = .61$, $p = .653$. The effect size for the interaction term as measured by $\eta^2$ was small (.01).The ANOVA also revealed that age categories were not significant, $F(2, 366) = 1.80$, $p = .167$. The effect size as measured by $\eta^2$ was small (.01). That is, 2% of

the variance in improvement scores was accounted for by age. However, the self-rated user category was significant, $F(2, 366) = 12.54$, $p < .001$. The effect size as measured by $\eta^2$ was medium (.06) indicating that 6% of the variance in improvement scores was accounted for by the self-rated user category.

Regarding the significance of the self-rated user category, as reported in the discussion of Research Question 4, Dunnett's C showed all three pairs of improvement score means were significant at the .05 level. New or novice users' improvement score mean was over 5.5 points higher than moderate users and 10 points higher than expert users. Moderate users' mean improvement was 4.5 points higher than expert users.

### Research Question 8

A one-way analysis of variance was completed to evaluate the relationship between students' improvement scores among the course delivery types in college level introductory computing classes. The dependent variable was improvement scores. The independent variable, course delivery type had three levels: on ground, online and hybrid. The ANOVA was significant, $F(2, 397) = 3.36$, $p = .036$. However, the effect size as measured by $\eta^2$ was small (.02) indicating that 2% of the variance in improvement scores was accounted for by the course type.

Because the overall $F$ was significant, multiple pairwise comparisons were conducted to determine which pair of means was significant. The Tukey test was used because equal variances were assumed, $F(2, 397) = 1.49$, $p = .226$. The Tukey procedure determined that there was a significant difference in the improvement means between on ground and hybrid courses ($p = .048$). The improvement score mean for on ground courses was five points higher than the mean for hybrid courses. However, there was no significant difference between on ground and online course ($p = .447$) and no significant difference between online and hybrid courses ($p = .801$).

## SUMMARY AND RECOMMENDATIONS

Onsite, online and hybrid courses comprised the methods of course delivery available to students. The findings revealed no significant difference between mean students' improvement scores (post-test scores minus pretest scores) in the on ground and online courses. However, there was a significant difference between improvement scores in the on ground and hybrid courses. Mean improvement scores for on ground courses were 21% higher than hybrid courses and 13% higher than online courses. One potential reason for this disparity could be that instructors clarify class concepts and assignments for on ground courses with just-in-time teaching, while online courses might require several communications to explain an instruction or assignment.

Advanced, detailed knowledge of course delivery methods would provide additional information for the student before they registered for a course. The institution would benefit from the creation of an online columnar table of delivery types. The table would detail specific components included in each course type, on ground, online, and hybrid. This would provide better understanding when registering for courses, thus improving a student's success rate in the course. The participating community college should continue to standardize course requirements for all sections of the college level introductory computing class to ensure quality for students. Each college level introductory computing class should continue to administer an exit survey to elicit student feedback.

For new or novice users, the college level introductory computing class should provide a "first steps" video library embedded in D2L. Camtasia (http://www.camtasia.com) or Jing (http://www.jing.com) are two common editing software packages used to create videos. Some introductory video topics would include opening and closing a file, saving a file to different storage locations, and downloading and extracting a file from the course management system. Students could also be directed to free resources that are available online to increase a student's initial computing skill level. In 2009, Microsoft established the Microsoft Digital Literacy Program. This program is comprised of a series of videos that teach standard literacy skills. The Standard Skills Curriculum includes computer basics, the Internet an introduction to productivity software, security, and leading a digital lifestyle to build computing self-efficacy. As Orr, Allen and Poindexter (2001) stated, instructors could apply interventions if they had better understanding of the computer attitudes of their students.

Adobe Connect (http://www.adobe.com) is another way to link with students through the use of technology. The purchase and use of Adobe Connect web conferencing software in a college level introductory computing class would facilitate more immediate feedback for online and hybrid students while providing student engagement data for the instructor.

The participating college should develop course learning modules for the college level introductory computing class to tailor student learning. These course learning modules are units of study that students could complete within a specified time period at their own pace and with little instructor interaction. In order for students to move forward to the next module, they would have to attain a predetermined minimum module score. For self-rated expert users, this would provide an alternative to the traditional classroom instruction.

Connected Tennessee's (http://www.connectedtn.org) organizational mission statement emphasizes design strategies to educate, use, and deliver technology access to Tennesseans. Location 2 would continue to benefit from expanded broadband connectivity for its rural users.

## REFERENCES


Bandura, A. (1997). *Self-efficacy: The exercise of control. New York, NY: Longman.*

Burniske, R. (2000). Literacy in the cyber age. *Ubiquity, 1(12), 3. Retrieved from*http://www.acm.org/ubiquity/book/r_burnishe_2.html?CFID=41212132&CFTOKEN=14117722

Cape Fear Community College. (2010). Computer competency. Retrieved from http://www2.cfcc.edu/learninglab/computer-competency/

Childers, S. (2003). Computer literacy: Necessity or buzzword? *Information Technology and* Libraries. Retrieved from http://digitalcommons.unl.edu/libraryscience/90

Dettori, L., Steinbach, T., & Kalin, M. (2006). Is this course right for you? Using self-tests for students' placement. *Information Systems Education Journal, 4*(77), 1-12.

Martin, F., & Dunsworth, Q. (2007). A methodical formative evaluation of computer literacy course: What and how to teach. *Journal of Information Technology Education, 6, 123-134.*

Messineo, M., & DeOllos, I. (2005). Are we assuming too much? Exploring students' perceptions of their computer competence. College Teaching, 53(2), 50.

Orr, C., Allen, D., & Poindexter, S. (2001, April-June). The effect of individual differences on computer attitudes: An empirical study. Journal of End User Computing, 13(2), 26.

This page is intentionally blank.

# The Woodworker's Website: A Project Management Case Study

**Marsha Jance, Ph.D.**
Assistant Professor of Business Administration
School of Business and Economics
Indiana University East
Richmond, Indiana

## ABSTRACT

*A case study that focuses on building a website for a woodworking business is discussed. Project management and linear programming techniques can be used to determine the time required to complete the website project discussed in the case. This case can be assigned to students in an undergraduate or graduate decision modeling or management science course. The case study, solution, and grading rubric are presented.*

## CASE

George, after a successful engineering career, has decided to pursue his lifelong dream of opening a woodworking business. George has been woodworking for a number of years and is a master craftsman. His primary products include wood carvings, furniture, jewelry boxes, wooden bowls, and other beautiful wooden objects. George has been selling his products at woodworking shows, arts and craft fairs, and at local businesses. Business has been picking up significantly and George feels that now is the time to launch a website for his business.

George wants a website that will showcase his products, allow secure online ordering, and has social media capability. In addition, George would like to provide videos on how to wood carve. The videos will be free for a two week period and then there will be a nominal monthly subscription fee. This monthly fee will allow one to watch unlimited videos and download wood carving patterns. George wants to add enough videos to get the subscription service started and then he will add additional new videos each month.

He contacts Annie, a family friend, who owns a software and website development business. They meet for lunch and George gives her all the specific requirements for the website. George would like to have a website launched in less than three weeks. He will be a vendor at a large woodworking show in six weeks and wants a website in place so potential visitors can peruse his products prior to the show.

Annie is happy to help George with the website and carefully takes notes of all his website requirements. She tells George that she needs to estimate how long the website project will take given that she and her employees are in the midst of several projects. However, she promises that she will try her best to have the project completed within three weeks. George tells Annie that he is willing to pay extra in order to have the website completed within a three week period.

Annie goes back to her office and puts together the project activities, the time to complete each activity, and whether an activity time can be reduced (crashed) by hiring additional workers. She does not want to begin shooting videos for the subscription service (Activity J) until the videos for the wooden products are complete (Activity B). Annie can hire out additional workers at a cost of $40.00 per hour ($320 for an eight hour workday). Table 1 provides the activity, description, time to complete an activity, predecessors, and the maximum amount that an activity can be crashed (completion time reduced).

Annie needs your help. Her project management expert is on vacation this week. Annie would like the following items and questions addressed in a report.

1) Develop a project network diagram that shows all the activities and precedence relationships.
2) Determine the project length (without crashing).
3) Determine the critical path activities.
4) What is the shortest time that the project can be finished if crashing is allowed? What would be the crashing cost?
5) Determine the crashing cost if the project must be finished in 15 days, 18 days, and 21 days?

**Table 1**

| Act. | Description | Pred. | Est. Time (days) | Max. Crash Amount |
|---|---|---|---|---|
| A | Pictures of wooden products | ---- | 3 | 1.5 |
| B | Videos of wooden products | ---- | 5 | 3 |
| C | Design of the website main page | ---- | 2 | 1 |
| D | Design of the website product catalog | ---- | 2 | 1 |
| E | Design of the website ordering system | ---- | 2 | 1 |
| F | Completion of the website main page which includes pictures and videos | A, B, C | 2 | 1 |
| G | Review and changes of the website main page | F | 1 | 0 |
| H | Completion of the product catalog and ordering systems | A, B, D, E | 2 | 1 |
| I | Review and changes to the product catalog and ordering systems | H | 1 | 0 |
| J | Videos for the subscription system | B | 15 | 5 |
| K | Design of the website subscription section | J | 3 | 1.5 |
| L | Social media | J | 2 | 1 |
| M | Final website integration, review, and changes | G, I, K, L | 2 | 0 |

## SOLUTION

Table 2 shows the early start times (EST), early finish times (EFT), late start times (LST), late finish times (LFT), and slacks (LFT-EFT or LST-EST). Activities B, J, K, and M are on the critical path since their slack is zero.

Table 3 shows the project completion time, expected crashing cost, and the activities to be crashed if crashing is permitted.

**Table 2**

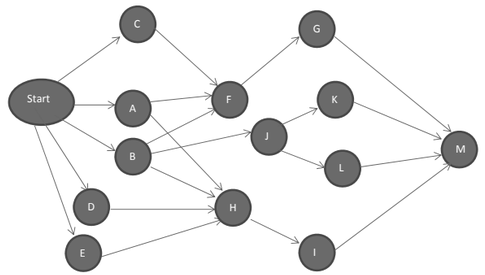
| Act. | Estimated Time to Complete Activity (days) | EST | EFT | LST | LFT | Slack |
|---|---|---|---|---|---|---|
| A | 3 | 0 | 3 | 17 | 20 | 17 |
| B | 5 | 0 | 5 | 0 | 5 | 0 |
| C | 2 | 0 | 2 | 18 | 20 | 18 |
| D | 2 | 0 | 2 | 18 | 20 | 18 |
| E | 2 | 0 | 2 | 18 | 20 | 18 |
| F | 2 | 5 | 7 | 20 | 22 | 15 |
| G | 1 | 7 | 8 | 22 | 23 | 15 |
| H | 2 | 5 | 7 | 20 | 22 | 15 |
| I | 1 | 7 | 8 | 22 | 23 | 15 |
| J | 15 | 5 | 20 | 5 | 20 | 0 |
| K | 3 | 20 | 23 | 20 | 23 | 0 |
| L | 2 | 20 | 22 | 21 | 23 | 1 |
| M | 2 | 23 | 25 | 23 | 25 | 0 |

**Table 3**

| Completion Time | Crashing Cost | Activities to be Crashed |
|---|---|---|
| 15.5 days | $3200 | B, J, K, L |
| 16 days | $2880 | B, J, K |
| 17 days | $2560 | B, J |
| 18 days | $2240 | B, J |
| 19 days | $1920 | B, J |
| 20 days | $1600 | B, J |
| 21 days | $1280 | B, J |
| 22 days | $960 | B |
| 23 days | $640 | B |
| 24 days | $320 | B |
| 25 days | $0 | None |

A complete Excel solution can be obtained by emailing the author. The following are the items and answers to questions listed above:

1) The project network diagram:




2) The project will take 25 days without crashing any activities.

3) The critical path items are activities: B, J, K, and M since their slack is zero.

4) The shortest time that the project can be completed if crashing is allowed is 15.5 days. The crashing cost is $3,200 to finish the project in 15.5 days.

5) The project cannot be completed in less than 15.5 days. The cost for getting the project completed in 18 days is $2240 and the cost is $1280 to have the project finished within 21 days.

## GRADING RUBRIC

The following is a sample grading rubric for this case study. Although 40 points have been allocated to the case, the point value and rubric can easily be altered.

- Project network diagram (5 points)
  - 4.00 to 5.00 points: The network diagram is correct or there is a minor mistake. The activities and precedence relationships are clearly shown.
  - 2.50 to less than 4.00 points: A decent attempt; however, there are errors. More than minor mistakes.
  - 0.00 to less than 2.50 points: Not attempted or not a decent attempt. Many errors.
- An Excel model that displays the early start times, early finish times, late start times, late finish times, and slacks (15 points)
  - 12.00 to 15.00 points: The model is correct or there are minor mistakes. The model shows the EST, EFT, LST, LFT, and slacks. It is very clear from the model what are the critical items and when the project will be completed.
  - 7.00 to less than 12.00 points: A decent attempt; however, there are errors. For example, mistakes are made in calculating the slack for several activities.
  - 0.00 to less 7.00 points: Not attempted or not a decent attempt. Many errors.
- An Excel model that shows the activities that should be crashed, project completion time, and the crashing cost (15 points)
  - 12.00 to 15.00 points: The model is correct or there are minor mistakes. The model clearly shows the activities that should be crashed, when the project will be completed, and the crashing cost.
  - 7.00 to less than 12.00 points: A decent attempt; however, there are errors.
  - 0.00 to less 7.00 points: Not attempted or not a decent attempt. Many errors.
- Questions (5 points)
  - 4.00 to 5.00 points: All questions have clearly and accurately been answered or there is a minor mistake. Correct grammar and spelling are used in answering the questions.
  - 2.50 to less than 4.00 points: A decent attempt; however, there are errors. More than minor mistakes. Grammar and spelling issues.
  - 0.00 to less than 2.50 points: Not attempted or not a decent attempt. Many errors.

This page is intentionally blank.

# Metacognition: Transforming Learning Experience

**Dr. Emmanuel Chekwa**
Miles College
Birmingham, Alabama

**Misty McFadden**
Miles College
Birmingham, Alabama

**Angelia Divine**
Miles College
Birmingham, Alabama

**Tina Dorius**
Miles College
Birmingham, Alabama

## *ABSTRACT*

*A simplistic definition of metacognition is "thinking about thinking." It involves taking time to analyze and delve into the various ways the mind receives and retains information. It is not a new concept but metacognition is evolving as a new word for successful learners. It is stimulating much conversation and excitement in academia as educators strive to enhance learning skills. This paper dissects the concept of metacognition and argues that it could be the new "best" thing in the field of thinking and learning. It discusses the Miles College experience in using metacognition principles to enhance student learning.*

## EVOLUTION OF METACOGNITION

The concept of metacognition has been around since humans have been able to reflect on their cognitive experience. Cognition or cognitive experiences are mental processes that involve attention, memory, manufacturing and understanding language, learning, reasoning, problem solving, and decision making. The famous ancient Greek philosopher, Plato, is credited for coining the concept of "thinking about your own thinking" in 400 BC. In 1690 John H. Locke, the English philosopher, mentioned the concept of children reflecting on their own thinking process, which is the basis of metacognition. However, the word "metacognition" was made popular by American psychologist John H. Flavell in the 1970's. Metacognition is thinking about thinking, knowing about knowing, or cognition about cognition. Metacognition is to know when, why and how to solve problems; it is a higher-order of thinking that enables understanding. Metacognition is consciousness of one's own learning or rational process; it is having an appreciation for the knowledge that you already have, knowing how and making room for the knowledge you do not have. This evolving concept is like an internal guide that notices when one's comprehension fails or succeeds and why. The concept may seem intimidating initially but we engage in metacognitive activities daily.

Metacognition is very critical in successful learning; as educators it is beneficial to our students to teach them this concept so they know how to allocate their cognitive resources through metacognitive control. Their learning will improve as they take control of their metacognitive capabilities

## MILES COLLEGE'S METACOGNITION EXPERIENCE

The Miles College Metacognition Lab has one singular, simple mission: To teach students very specific, tailored metacognitive strategies that will increase academic success and retention. Around Miles College, the term metacognition is now commonplace and well understood. However, when the Metacognition Lab was initially created two years ago, there was a healthy amount of skepticism and confusion over what metacognition is and how it was supposed to help students succeed.

In the summer of 2011, Administration was inspired to bring metacognition to Miles College after they heard

a speaker at the SACSCOC 2011 Summer Institute on "Metacognition: The Key to Student Learning". It is a testament to the Miles College's vision for and commitment to student learning that one of the leading scholars of metacognition was a lecturer at the Miles College Faculty Conference at the beginning of spring 2013. Miles College is at the forefront of the nation's metacognition movement. Miles College is one of the few Colleges and Universities in the United States to have a campus-wide center dedicated to student metacognition.

As the Metacognition Lab was birthed, the most common questions we heard from students and faculty alike were: "What are metacognitive strategies?" and "Why is metacognition essential?"

The Lab took every opportunity to spread the word that our purpose was to teach students activities that would help them become aware of and monitor their learning in order to enable them to better manage their cognitive skills and to determine weaknesses that can be corrected by constructing new cognitive skills.

Thanks to the support of the entire Miles College Administration, the Metacognition Lab was very successful in spreading awareness about our lab and our mission. As noted previously, the guest speaker lectured and gave workshops to train the entire Miles College faculty and staff on the importance of recognizing and utilizing metacognition as a key to unlocking student success. After the conference, we had faculty that had once been critical of the Lab's mission sharing with us that the guest speaker's talks and workshops had energized and encouraged them more than any conference they had ever attended.

So how exactly has the Metacognition Lab helped students? Well, allow us to let our students tell you. When asked how learning about metacognition helped them, this is a sampling of some of the responses we got from our participants:

1. "Slow down on my work"
2. "To concentrate and ask for help if you need it"
3. "Relaxing helps the lessons go easier"
4. "I learned how to use the Cornell Note-Taking Method"
5. "Read the directions before getting started"
6. "How to solve equations and why I got the answer"
7. "Helped me to be more CONFIDENT!!!"
8. "It is a relaxed atmosphere-which makes learning more comfortable"

Since its inception, the Metacognition Lab has seen tremendous student success. In the 2011-2012 academic year, students who participated in the Lab had on average more than a 12% increase in their semester GPA. For students who started with less than a 2.0 GPA, the average increase in their semester GPA was over 40%.

That first year, the Lab started with a staff of two work-study Honor students and one full time coordinator as Academic Coaches. Over the 2011-2012 academic year we worked with 28 students, many of whom were students with very low grade point average and student athletes threatened with ineligibility. We also had two student athletes who were ineligible to participate in athletics (as well as receive any scholarship money) become eligible again for the fall. We even had two students earn a 4.0 GPA for the summer term.

This academic year, 2012/2013, the Metacognition Lab was expanded to include nine handpicked Academic Success Coaches. The Lab now has a staff which includes seven Honor students who are part-time employees, one Honor student volunteer and one full time coordinator. This semester, the Metacognition Lab worked one-on-one with over 240 students. That amounts to about 85% increase in student participation in just one academic school year!

Impressively, despite the amazing increase in students participating, we have seen very similar increases in students' semester GPA's to our first year. In the 2012-2013 academic year, students who participated in the Lab had on average more than an 8% increase in their semester GPA's. For students who started with less than a 2.0 GPA, the average increase in their semester GPA's was over 55%. Additionally, when looking at students new to Miles with no prior GPA who worked with the Lab, we saw that over 68% of them ended the semester with over a 2.0 GPA while 21% of them ended the semester with over a 3.0 GPA.

Under the Lab's strategic system of student contact, the Academic Success Coaches continually monitor and assess the students as well as teach the students to continually monitor and assess themselves. We aim to keep each student's experience with the Lab individualized and flexible. Depending on what a student's needs are, we offer a range of personalized lessons such as understanding strategies to use in order to comprehend college textbooks, understanding the importance of inner dialogue in assisting or impeding self-motivation, and evaluating and understanding learning styles. We complement these metacognitive strategies by then demonstrating how to use these new ideas on the assignments that the student is working on in their classes. Each Academic Coach has one main goal: To convince the students that the power lies in their hands and that they can take control of their minds and their education.

To illustrate with one example of how the Metacognition Lab has changed student lives, with his permission we would like to introduce Miles College student Alfred (name changed for privacy.) Alfred came to us after midterms this spring semester. Alfred unfortunately had a very tumultuous beginning of the semester and came to us with subpar midterm grades. He managed to upset all of his professors and give off the impression that he did not care about his grades. At the time he came to us, Alfred had not bought any of his textbooks and was not really doing any school work outside of class.

The Metacognition Lab Coaches worked together to provide a welcoming, encouraging, and most importantly, consistent environment where Alfred could come and be treated as a scholar. We taught Alfred how to order his textbooks on the website Half.com and how to order older editions that he could afford. Alfred was given workshops on strategies to help him not only read his textbooks, but understand and retain the information by previewing material and asking critical questions about the text in order to stay engaged in the material.

When we first met Alfred, his professors complained that he was frequently missing class and even when he did show up, and he would be conspicuously late. As Alfred began working with the Lab, the Coaches stressed to him the importance of going to class not only on time and every time, but coming to class prepared to participate by reading the material ahead of time and having questions on hand to ask his professor. His attendance improved, his relationships with his professors improved, and he would spend any time not actually in class in the lab.

At the end of the semester, Alfred's D in Biology Lab improved to an A, his F in Crime and Criminality had improved to a C, his D in Speech improved to a B and his F in African American Experience improved to a B. Most astonishing, Alfred now felt like a true scholar in his college community, had built relationships with some of the top Honor students, and believed in his own academic abilities. He is now a model student and is one of the Metacognition Lab's most vociferous recruiters on campus.

As the Metacognition Lab continues to evolve and expand, the services always remain rooted in teaching the student strategies, techniques, and organizational skills that will allow the student to become an independent thinker who is a master learner. We hold true to the old adage: "Give a man a fish and he eats for a day, teach him to fish and he eats for a lifetime". The Metacognition Lab is thankful for the opportunity to empower the students of Miles College on their journey to become lifelong scholars.

## CONCLUSION

As the Miles College Metacognition Lab continues to evolve and expand, the services always remain rooted in teaching students strategies, techniques and organizational skills that will allow them to become an independent thinker who is a master of learning. The Metacognition Lab has been beneficial to both the students who completed High School prepared or unprepared for College work. One objective is to statistically close the gap between the Honor students and non-Honor students. Educators can experience greater rewards from unprepared students by establishing higher expectations for them; emphasizing consistent contact, helping students in determining their individual learning style, and by helping students define their own academic success. By meeting students where they are, helping to clarify their academic responsibility and establishing a learning community of scholars, students will embrace their metacognitive skills and increase their academic reward.

## REFERENCES

*Thinking About Thinking: Metacognition*. (2013, May 15). Retrieved May 15, 2013, from Mind Matters : http://www.mindmatters.edu.au/resources_and_downloads/staff_matters/the_thriving_self/useful_information/thinking_about_thinking_metacognition.html

Anderson, J. R. (1976). Language, memory, and thought. Hillsdale, NJ: Anderson , J. R. (1976). Language, memory, and thought. Hillsdale, NJ: Erlbaum.

Bailey, P. (2012, February 27). *Sensing Thinking Behaving*. Retrieved May 15, 2013, from Brain Facts: http://www.brainfacts.org/sensing-thinking-behaving/awareness-and-attention/articles/2012/metacognition/

Dacin, P. A., & Mitchell, A. A. (1986). *Association of Consumer Research*. Retrieved May 18, 2013, from The Measurement of Declarative Knowledge: http://www.acrwebsite.org/search/view-conference-proceedings.aspx?Id=6530

Darling-Hammond, L., Austin, K., Cheung, M., & Martin, D. (n.d.). Session 9 Thinking About Thinking: Metacognition. *The Learning Class Room*, 157-172.

Flavell, J. H. (1979, October). Metacognition and Cognitive Monitoring. *American Psychologist*, 906-911.

Gabriel, K. F. (n.d.). Teaching Unprepared Students. Sterling, VA: Stylus Publishing.

Hartley, D. (2010). *University of Minnesota's Student Writing Guide*. Retrieved May 30, 2013, from University of Minnesota: http://writing.umn.edu/sws/assets/pdf/2010SWG.pdf

Holmes , A. (n.d.). *What Is the Full Meaning of PQ3R?* Retrieved May 30, 2013, from Ehow: http://www.ehow.com/info_8721515_full-meaning-pq3r.html

Jenkins Ph.D., B. (2013, May 15). *Blog: Teaching Metacognition Thinking About Thinking*. Retrieved May 15, 2013, from Scilearn: http://www.scilearn.com/blog/teaching-metacognition-thinking-about-thinking.php

Kolb, A. Y., & Kolb, D. A. (n.d.). *The Learning Way: Metacognitive Aspects of Experiential Learning.* Cleveland: Case Western Reserve University.

Lang, J. M. (2012, January 17). *Metacognition and Student Learning*. Retrieved May 15, 2013, from http://chronicle.com: http://chronicle.com/article/MetacognitionStudent/130327

Livingston, J. A. (1997). *Metacognition: An Overview*. Retrieved May 18, 2013, from Buffalo: http://gse.buffalo.edu/fas/shuell/cep564/metacog.htm

McGuire, P. S. (n.d.). Metacognition: The Key to Improving Student Learning. (pp. 1-57). Louisiana State University.

Metcalfe, J. (n.d.). *Evolution of Metacognition*. Retrieved May 18, 2013, from http://www.columbia.edu/cu/psychology/metcalfe/PDFs/Metcalfe%20EvolMetacog.pdf

Pauk, W. (2001). *How to Study in College 7/e*. Retrieved May 18, 2013, from The Cornell Note-taking System: http://lsc.cornell.edu/LSC_Resources/cornellsystem.pdf

Peirce, W. (2007, November 17). *Metacognition: Study Strategies, Monitoring, and Motivation*. Retrieved May 18, 2013, from Prince George's Community College : http://academic.pg.cc.md.us/~wpeirce/MCCCTR/metacognition.htm

Ross, K. P. (2013, May 15). *News: Ability to 'Think About Thinking' Not Limited Only to Humans According to New Research*. Retrieved May 15, 2013, from GSU.edu: http://www.gsu.edu/news/63957.html

# JOINT CONFERENCE
## May 20th, 21st and 22nd 2015 in Nashville, TN at the Holiday Inn Vanderbilt

## International Conference on Learning and Administration in Higher Education (ICLAHE.org)

All too often learning takes a back seat to discipline related research. The International Conference on Learning and Administration in Higher Education seeks to focus exclusively on all aspects of learning and administration in higher education. We wish to bring together, a wide variety of individuals from all countries and all disciplines, for the purpose of exchanging experiences, ideas, and research findings in the processes involved in learning and administration in the academic environment of higher education.

We encourage the submission of manuscripts, presentation outlines, and abstracts in either of the following areas:

### Learning

We encourage the submission of manuscripts pertaining to pedagogical topics. We believe that much of the learning process is not discipline specific and that we can all benefit from looking at research and practices outside our own discipline. The ideal submission would take a general focus on learning rather than a discipline-specific perspective. For example, instead of focusing on "Motivating Students in Group Projects in Marketing Management", you might broaden the perspective to "Motivating Students in Group Projects in Upper Division Courses" or simply "Motivating Students in Group Projects" The objective here is to share your work with the larger audience.

### Academic Administration

We encourage the submission of manuscripts pertaining to the administration of academic units in colleges and universities. We believe that many of the challenges facing academic departments are not discipline specific and that learning how different departments address these challenges will be beneficial. The ideal paper would provide information that many administrators would find useful, regardless of their own disciplines

## Academic Business World International Conference (ABWIC.org)

The aim of Academic Business World is to promote inclusiveness in research by offering a forum for the discussion of research in early stages as well as research that may differ from 'traditional' paradigms. We wish our conferences to have a reputation for providing a peer-reviewed venue that is open to the full range of researchers in business as well as reference disciplines within the social sciences.

### Business Disciplines

We encourage the submission of manuscripts, presentation outlines, and abstracts pertaining to any business or related discipline topic. We believe that all disciplines are interrelated and that looking at our disciplines and how they relate to each other is preferable to focusing only on our individual 'silos of knowledge'. The ideal presentation would cross discipline. borders so as to be more relevant than a topic only of interest to a small subset of a single discipline. Of course, single domain topics are needed as well.

### Conferences

Academic Business World (ABW) sponsors an annual international conference for the exchange of research ideas and practices within the traditional business disciplines. The aim of each Academic Business World conference is to provide a forum for the discussion of research within business and reference disciplines in the social sciences. A secondary but important objective of the conference is to encourage the cross pollination of disciplines by bringing together professors, from multiple countries and disciplines, for social and intellectual interaction.