Contents

A Design Theory for Vigilant Online Learning Systems
M. Keith Wright, Ph.D. ................................................................. 1

Does Homework Really Matter for College Students in Quantitatively-based Courses?
Nichole Young, Amanda Dollman, N. Faye Angel ......................................................... 19

Developing a Creativity and Problem Solving Course In Support of the Information Systems Curriculum
Ben Martz & Jim Hughes ........................................................................ 27

Non-classroom Use of “Presentation Software” in Accelerated Classes:
Student Use and Perceptions of Value
Thomas Davies, Leon Korte, & Erin Cornelien ....................................................... 37

The Relationship between Growth Scores and the Overall Observation Ratings for Teachers in a Public School System in Tennessee
Joshua Davis, James H. Lampley, & Virginia Foley .................................................. 45

Engaging Business Students with Data Mining
Dan Brandon ......................................................................................... 53

Thinking Outside of the Box Office: Using Movies to Build Shared Experiences and Student Engagement in Online or Hybrid Learning
William Krese & Kathleen Harolds Watland ......................................................... 59

Metacognition Lab at Miles College
Takes Peer Mentoring to a Higher Level
Emmanuel Chekwa & Tina Doriusi ........................................................................ 65

The Use of Simulation and Cases to Teach Real World Decision Making:
Applied Example for Health Care Management Graduate Programs
Alyson Eisenhardt & Susanne Bruno Ninasi ............................................................. 71
JOURNAL OF LEARNING IN HIGHER EDUCATION

JW PRESS
MARTIN, TENNESSEE
### Board of Reviewers

<table>
<thead>
<tr>
<th>Reviewer</th>
<th>Country</th>
<th>State/Region</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azizi, Ali</td>
<td>United States</td>
<td>KY</td>
<td>Morehead State University</td>
</tr>
<tr>
<td>Albritton, Mary</td>
<td>United States</td>
<td>WI</td>
<td>University of Wisconsin-Milwaukee</td>
</tr>
<tr>
<td>Akyuz, Ghansum</td>
<td>United States</td>
<td>LA</td>
<td>Southeastern Louisiana University</td>
</tr>
<tr>
<td>Allen, Gerald L.</td>
<td>United States</td>
<td>IL</td>
<td>Southern Illinois Workforce Investment Board</td>
</tr>
<tr>
<td>Allison, Jerry</td>
<td>United States</td>
<td>OK</td>
<td>University of Central Oklahoma</td>
</tr>
<tr>
<td>Alman, Brian</td>
<td>United States</td>
<td>WI</td>
<td>University of Wisconsin-Milwaukee</td>
</tr>
<tr>
<td>Anderson, Paul</td>
<td>United States</td>
<td>CA</td>
<td>Asian-Pacific University</td>
</tr>
<tr>
<td>Animal, Janet</td>
<td>United States</td>
<td>TN</td>
<td>Tennessee Technological University</td>
</tr>
<tr>
<td>Animal, M. Merle</td>
<td>United States</td>
<td>TN</td>
<td>Tennessee Technological University</td>
</tr>
<tr>
<td>Atanas, Ionut B.</td>
<td>United States</td>
<td>TX</td>
<td>The University of Texas at Brownsville</td>
</tr>
<tr>
<td>Anderson, Winton</td>
<td>United States</td>
<td>DE</td>
<td>Delaware State University</td>
</tr>
<tr>
<td>Bain, Lisa Z.</td>
<td>United States</td>
<td>RI</td>
<td>Rhode Island College</td>
</tr>
<tr>
<td>Barkdale, W. Kevin</td>
<td>United States</td>
<td>TN</td>
<td>Grand Canyon University</td>
</tr>
<tr>
<td>Barnett, Marcelle Bernard</td>
<td>Argentina</td>
<td></td>
<td>EIDEA-Escuela de Dirección de Empresas</td>
</tr>
<tr>
<td>Barlow, Michelle E.</td>
<td>United States</td>
<td>SC</td>
<td>Claflin University</td>
</tr>
<tr>
<td>Bearden, James</td>
<td>United States</td>
<td>WA</td>
<td>Central Washington University</td>
</tr>
<tr>
<td>Bell, Roberto</td>
<td>Canada</td>
<td>Alberta</td>
<td>University of Lethbridge</td>
</tr>
<tr>
<td>Benedict, Elise</td>
<td>United States</td>
<td>VA</td>
<td>Cambridge College</td>
</tr>
<tr>
<td>Bonds, Jon A.</td>
<td>United States</td>
<td>WI</td>
<td>University of Wisconsin-Green Bay</td>
</tr>
<tr>
<td>Bosk, Mirta</td>
<td>United States</td>
<td>WA</td>
<td>Gonzaga University</td>
</tr>
<tr>
<td>Berry, Rik</td>
<td>United States</td>
<td>AR</td>
<td>University of Arkansas at Fort Smith</td>
</tr>
<tr>
<td>Beatty, Cabrin</td>
<td>United States</td>
<td>GA</td>
<td>Augusta University</td>
</tr>
<tr>
<td>Bankers, Joseph C.</td>
<td>United States</td>
<td>WV</td>
<td>Fairmont State University</td>
</tr>
<tr>
<td>Bond, Katherine T.</td>
<td>United States</td>
<td>TN</td>
<td>Middle Tennessee State University</td>
</tr>
<tr>
<td>Bridges, Grant</td>
<td>United States</td>
<td>TX</td>
<td>The University of Texas at San Antonio</td>
</tr>
<tr>
<td>Brown Jr., Ken L.</td>
<td>United States</td>
<td></td>
<td>The National Graduate School</td>
</tr>
<tr>
<td>Buchanan, Thomas A.</td>
<td>United States</td>
<td>CO</td>
<td>University of Colorado at Boulder</td>
</tr>
<tr>
<td>Burkhill, Edith M.</td>
<td>United States</td>
<td>TN</td>
<td>Witten University</td>
</tr>
<tr>
<td>Burdell, Darrell Neuman</td>
<td>United States</td>
<td>VA</td>
<td>Virginia International University</td>
</tr>
<tr>
<td>Burum, Sharon L.</td>
<td>United States</td>
<td>DE</td>
<td>The National Graduate School</td>
</tr>
<tr>
<td>Busch, Richard</td>
<td>United States</td>
<td>MI</td>
<td>Lawrence Technological University</td>
</tr>
<tr>
<td>Bred, Jane</td>
<td>United States</td>
<td>AL</td>
<td>University of Mobile</td>
</tr>
<tr>
<td>Cross, W. Bruce</td>
<td>United States</td>
<td>SC</td>
<td>Southern Wesleyan University</td>
</tr>
<tr>
<td>Causs, Cynthia M.</td>
<td>United States</td>
<td>GA</td>
<td>Augusta State University</td>
</tr>
<tr>
<td>Causs, Cynthia Rodriguez</td>
<td>United States</td>
<td>GA</td>
<td>Georgia College &amp; State University</td>
</tr>
<tr>
<td>Carey, Catherine</td>
<td>United States</td>
<td>KY</td>
<td>Western Kentucky University</td>
</tr>
<tr>
<td>Casteen, Rosemary</td>
<td>United States</td>
<td>KY</td>
<td>Messiah State University</td>
</tr>
<tr>
<td>Casteen, Mary</td>
<td>United States</td>
<td>KY</td>
<td>Eastern Kentucky University</td>
</tr>
<tr>
<td>Casteen, Margaret</td>
<td>United States</td>
<td>WV</td>
<td>Fairmont State University</td>
</tr>
<tr>
<td>Caster, Margaret</td>
<td>United States</td>
<td>WV</td>
<td>Fairmont State University</td>
</tr>
<tr>
<td>Reviewer</td>
<td>Country</td>
<td>State/Region</td>
<td>Affiliation</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------</td>
<td>-------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>Emmett, Edna</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>Ellis, Amy</td>
<td>United States</td>
<td>TN</td>
<td>University of Tennessee</td>
</tr>
<tr>
<td>Eldridge, M.</td>
<td>United States</td>
<td>NC</td>
<td>North Carolina State University</td>
</tr>
<tr>
<td>Elia, T.</td>
<td>United States</td>
<td>FL</td>
<td>Florida State University</td>
</tr>
<tr>
<td>El-Kadri, Mohamed</td>
<td>United States</td>
<td>MD</td>
<td>Maryland State University</td>
</tr>
<tr>
<td>El-Kurra, Marwan</td>
<td>United States</td>
<td>NY</td>
<td>New York State University</td>
</tr>
<tr>
<td>Elmore, James</td>
<td>United States</td>
<td>NC</td>
<td>North Carolina State University</td>
</tr>
<tr>
<td>Elsayed, Shahrour</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Awadi, A.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>Elbanna, M.</td>
<td>United States</td>
<td>AL</td>
<td>Alabama State University</td>
</tr>
<tr>
<td>El-Helou, J.</td>
<td>United States</td>
<td>NC</td>
<td>North Carolina State University</td>
</tr>
<tr>
<td>El-Naggar, A.</td>
<td>United States</td>
<td>NC</td>
<td>North Carolina State University</td>
</tr>
<tr>
<td>El-Shami, S.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Sheikh, A.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Wardat, A.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Wardat, A.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Zahawi, O.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>Elabedy, S.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>El-Abd-Elmo, M.</td>
<td>United States</td>
<td>TX</td>
<td>Texas State University</td>
</tr>
<tr>
<td>Reviewer</td>
<td>Country</td>
<td>State/Region</td>
<td>Affiliation</td>
</tr>
<tr>
<td>--------------------------</td>
<td>------------------</td>
<td>--------------------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>Moore, Gregory A.</td>
<td>United States</td>
<td>TN</td>
<td>Austin Peay State University</td>
</tr>
<tr>
<td>Moore, Paula E.</td>
<td>United States</td>
<td>TN</td>
<td>University of Tennessee Martin</td>
</tr>
<tr>
<td>Maranho dos Santos, Andre</td>
<td>Brazil</td>
<td></td>
<td>Universidade do Vale do Iguac</td>
</tr>
<tr>
<td>Morrison, Ron</td>
<td>United States</td>
<td>FL</td>
<td>Bethune-Cookman College</td>
</tr>
<tr>
<td>Molien, Alice</td>
<td>United States</td>
<td>MS</td>
<td>Jackson State University</td>
</tr>
<tr>
<td>Monroy, Ismael S.</td>
<td>Cuba</td>
<td></td>
<td>Universidad Central &quot;Martha Almira&quot; de las Villas</td>
</tr>
<tr>
<td>Mori, Brian</td>
<td>United States</td>
<td>AL</td>
<td>University of Montevallo</td>
</tr>
<tr>
<td>Mushammed, Adil</td>
<td>United States</td>
<td>IL</td>
<td>University of Illinois at Springfield</td>
</tr>
<tr>
<td>Murphy, Andrea</td>
<td>United States</td>
<td>NC</td>
<td>Guadalupe-Wells University</td>
</tr>
<tr>
<td>Nunn, Hilda</td>
<td>United States</td>
<td>SD</td>
<td>Northern State University</td>
</tr>
<tr>
<td>Norton, Stephanie</td>
<td>United States</td>
<td>TN</td>
<td>Austin Peay State University</td>
</tr>
<tr>
<td>Nichols, Charles &quot;Bunny&quot;</td>
<td>United States</td>
<td>KY</td>
<td>Mid-Century University</td>
</tr>
<tr>
<td>Ninan, Susuha</td>
<td>United States</td>
<td>VA</td>
<td>Marymount University</td>
</tr>
<tr>
<td>Nixon, Judy C.</td>
<td>United States</td>
<td>TN</td>
<td>University of Tennessee at Chattanooga</td>
</tr>
<tr>
<td>Ogalehe, Fornas</td>
<td>United States</td>
<td>MS</td>
<td>Alcorn State University</td>
</tr>
<tr>
<td>O'Hearne, Robert D.</td>
<td>United States</td>
<td>LA</td>
<td>DuPaul University</td>
</tr>
<tr>
<td>Onwujuba-Dike, Christie</td>
<td>United States</td>
<td>EN</td>
<td>University of St Francis</td>
</tr>
<tr>
<td>Oo, Rafael</td>
<td>United States</td>
<td>TX</td>
<td>The University of Texas at Brownsville</td>
</tr>
<tr>
<td>Onzi, Valera</td>
<td>United States</td>
<td>SC</td>
<td>Anderson College</td>
</tr>
<tr>
<td>Pahud, Jusus</td>
<td>United States</td>
<td>AR</td>
<td>Henderson State University</td>
</tr>
<tr>
<td>Palma, David K.</td>
<td>United States</td>
<td>NE</td>
<td>University of Nebraska at Kearney</td>
</tr>
<tr>
<td>Paron, Retha C.</td>
<td>United States</td>
<td>TX</td>
<td>University of Houston-Victoria</td>
</tr>
<tr>
<td>Patna, Alina B.</td>
<td>United States</td>
<td>CA</td>
<td></td>
</tr>
<tr>
<td>Preta, Lotka F.</td>
<td>United States</td>
<td>WI</td>
<td>University of Wisconsin-La Crosse</td>
</tr>
<tr>
<td>Petkova, Olga</td>
<td>United States</td>
<td>CT</td>
<td>Central Connecticut State University</td>
</tr>
<tr>
<td>Person, Martha</td>
<td>United States</td>
<td>TX</td>
<td>Anchorage University of Technology</td>
</tr>
<tr>
<td>Phillips, Annemise S.</td>
<td>United States</td>
<td>CA</td>
<td>Southeastern Louisiana University</td>
</tr>
<tr>
<td>Pitarne, Toms</td>
<td>United States</td>
<td>TN</td>
<td>East Tennessee State University</td>
</tr>
<tr>
<td>Patten, Paula</td>
<td>United States</td>
<td>KY</td>
<td>Western Kentucky University</td>
</tr>
<tr>
<td>Pense, Richard</td>
<td>United States</td>
<td>KY</td>
<td>Eastern Kentucky University</td>
</tr>
<tr>
<td>Pedron, Leonard</td>
<td>United States</td>
<td>NJ</td>
<td>William Paterson University</td>
</tr>
<tr>
<td>Redman, Arnold</td>
<td>United States</td>
<td>TN</td>
<td>University of Tennessee at Martin</td>
</tr>
<tr>
<td>Robitaille, Elizabeth E.</td>
<td>United States</td>
<td>WI</td>
<td>Central College of New Brunswick</td>
</tr>
<tr>
<td>Reckford, Caroline</td>
<td>United States</td>
<td>TX</td>
<td>The University of Texas at Dallas</td>
</tr>
<tr>
<td>Rios, Louise</td>
<td>United States</td>
<td>TX</td>
<td>University of Houston-Victoria</td>
</tr>
<tr>
<td>Riley, Gisselle</td>
<td>United States</td>
<td>EN</td>
<td>Arkansas Tech University</td>
</tr>
<tr>
<td>Rios, Henry</td>
<td>United States</td>
<td>PA</td>
<td>Appalachian University</td>
</tr>
<tr>
<td>Rioch, Jey</td>
<td>United States</td>
<td>KY</td>
<td>Murray State University</td>
</tr>
<tr>
<td>Robinson, Marcha D.</td>
<td>United States</td>
<td>TN</td>
<td>The University of Memphis</td>
</tr>
<tr>
<td>Rond, A. Scott</td>
<td>United States</td>
<td>AL</td>
<td>Grand Valley State University</td>
</tr>
<tr>
<td>Ross, N.</td>
<td>United States</td>
<td>KS</td>
<td>Southern Illinois University</td>
</tr>
<tr>
<td>Ross, Marvin</td>
<td>United States</td>
<td>KS</td>
<td>Permig State University</td>
</tr>
<tr>
<td>Russell-Bichsaghen, Laura</td>
<td>United States</td>
<td>AL</td>
<td>Faulkner University</td>
</tr>
<tr>
<td>Sato, Shinji</td>
<td>United States</td>
<td>VA</td>
<td>George Mason University</td>
</tr>
<tr>
<td>Sarac, J.</td>
<td>United States</td>
<td>VA</td>
<td>Virginia Commonwealth University</td>
</tr>
<tr>
<td>Sarac, J.</td>
<td>United States</td>
<td>VA</td>
<td>Virginia Commonwealth University</td>
</tr>
<tr>
<td>Saruc, J.</td>
<td>United States</td>
<td>WA</td>
<td>Western Washington University</td>
</tr>
<tr>
<td>Sato, Sanju</td>
<td>United States</td>
<td>Indonesia</td>
<td>Anna Jyu Yagakura University</td>
</tr>
<tr>
<td>Sayace, Chahbari Imran</td>
<td>Pakistan</td>
<td></td>
<td>Creative Researcher</td>
</tr>
<tr>
<td>Reviewer</td>
<td>Country</td>
<td>State/Region</td>
<td>Affiliation</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------</td>
<td>----------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>Schaeffer, Donna M.</td>
<td>United States</td>
<td>VA</td>
<td>Marymount University</td>
</tr>
<tr>
<td>Schachtman, Greg</td>
<td>United States</td>
<td>NH</td>
<td>Air Force Institute of Technology</td>
</tr>
<tr>
<td>Schenkel, Terry</td>
<td>United States</td>
<td>EN</td>
<td>University of Indianapolis</td>
</tr>
<tr>
<td>Schmidb, Bevile</td>
<td>United States</td>
<td>GA</td>
<td>Augusta State University</td>
</tr>
<tr>
<td>Schud, Reuben</td>
<td>United States</td>
<td>IA</td>
<td>Southeastern Louisiana University</td>
</tr>
<tr>
<td>Schyler, Patricia</td>
<td>United States</td>
<td>KY</td>
<td>Bellarmine University</td>
</tr>
<tr>
<td>Seck, Robert W.</td>
<td>United States</td>
<td>AL</td>
<td>Samford University</td>
</tr>
<tr>
<td>Shai, Chris</td>
<td>United States</td>
<td>TX</td>
<td>Midwestern State University</td>
</tr>
<tr>
<td>Shapley, Sherry</td>
<td>United States</td>
<td>EN</td>
<td>Trine University</td>
</tr>
<tr>
<td>Shetos, Melanie L.</td>
<td>United States</td>
<td>AL</td>
<td>University of Alabama at Birmingham</td>
</tr>
<tr>
<td>Schäffer, Philip</td>
<td>United States</td>
<td>GA</td>
<td>Augusta State University</td>
</tr>
<tr>
<td>Simpson, Ethan</td>
<td>United States</td>
<td>OK</td>
<td>Southwestern Oklahoma State University</td>
</tr>
<tr>
<td>Singh, Navin Kumar</td>
<td>United States</td>
<td>AZ</td>
<td>Northern Arizona University</td>
</tr>
<tr>
<td>Smirnovskaya, Gali</td>
<td>United States</td>
<td>FL</td>
<td>Florida Atlantic University</td>
</tr>
<tr>
<td>Smith, Allen F.</td>
<td>United States</td>
<td>MS</td>
<td>Jackson State University</td>
</tr>
<tr>
<td>Smith, L.K.</td>
<td>United States</td>
<td>MS</td>
<td>Rice College</td>
</tr>
<tr>
<td>Smith, W. Robert</td>
<td>United States</td>
<td>MS</td>
<td>University of Southern Mississippi</td>
</tr>
<tr>
<td>Smith-Mela, Anur H.</td>
<td>Canada</td>
<td>Ontario</td>
<td>University of Toronto</td>
</tr>
<tr>
<td>Smith, Mary V.</td>
<td>United States</td>
<td>SC</td>
<td>Lander University</td>
</tr>
<tr>
<td>St Pierre, Armand</td>
<td>Canada</td>
<td>Alberta</td>
<td>Athabasca University</td>
</tr>
<tr>
<td>Story, Louise</td>
<td>United States</td>
<td>MT</td>
<td>Montana State University-Billings</td>
</tr>
<tr>
<td>Storm, Lyn</td>
<td>United States</td>
<td>NY</td>
<td>State College</td>
</tr>
<tr>
<td>Stott, Karen</td>
<td>United States</td>
<td>NH</td>
<td>Southern New Hampshire University</td>
</tr>
<tr>
<td>Stone, Matthew</td>
<td>United States</td>
<td>VA</td>
<td>Marymount University</td>
</tr>
<tr>
<td>Storm, Randy</td>
<td>United States</td>
<td>GA</td>
<td>Georgia State University</td>
</tr>
<tr>
<td>Stump, Paul C.</td>
<td>United States</td>
<td>TN</td>
<td>Cumberland University</td>
</tr>
<tr>
<td>Streifel, Beverly</td>
<td>United States</td>
<td>TN</td>
<td>Cumberland University</td>
</tr>
<tr>
<td>Tabbott, Laura</td>
<td>United States</td>
<td>AL</td>
<td>University of Alabama at Birmingham</td>
</tr>
<tr>
<td>Tangaroa, John</td>
<td>United States</td>
<td>TX</td>
<td>The University of Texas-Pan American</td>
</tr>
<tr>
<td>Taniogi, Ukiko</td>
<td>United States</td>
<td>AB</td>
<td>Rock International LLC</td>
</tr>
<tr>
<td>Terrell, Robert</td>
<td>United States</td>
<td>TN</td>
<td>Carson-Newman College</td>
</tr>
<tr>
<td>Terry, Kathleen V.</td>
<td>United States</td>
<td>FL</td>
<td>Saint Leo University</td>
</tr>
<tr>
<td>Thaddeus, John D.</td>
<td>United States</td>
<td>FL</td>
<td>Warner University</td>
</tr>
<tr>
<td>Thompson, Shawned</td>
<td>United States</td>
<td>KY</td>
<td>Northern Kentucky University</td>
</tr>
<tr>
<td>Thomasmen, Bruce</td>
<td>United States</td>
<td>TN</td>
<td>Tennessee Technological University</td>
</tr>
<tr>
<td>Tornus, Jeffrey</td>
<td>United States</td>
<td>LA</td>
<td>McNeese State University</td>
</tr>
<tr>
<td>Tracy, Daniel L.</td>
<td>United States</td>
<td>SD</td>
<td>University of South Dakota</td>
</tr>
<tr>
<td>Tran, Hang Thi</td>
<td>United States</td>
<td>TN</td>
<td>Middle Tennessee State University</td>
</tr>
<tr>
<td>Treble, James P.</td>
<td>United States</td>
<td>WI</td>
<td>Marquette University</td>
</tr>
<tr>
<td>Trajkovski, Sheila</td>
<td>United States</td>
<td>EN</td>
<td>Indiana University Northwest</td>
</tr>
<tr>
<td>Udofiaha, A. Brian</td>
<td>United States</td>
<td>MS</td>
<td>Alcorn State University</td>
</tr>
<tr>
<td>Udofiaha, Bennet</td>
<td>United States</td>
<td>MS</td>
<td>Alcorn State University</td>
</tr>
<tr>
<td>Ueki, Natsuna</td>
<td>United States</td>
<td>TX</td>
<td>Texas A&amp;M International University</td>
</tr>
<tr>
<td>Ueda, Jufu</td>
<td>United States</td>
<td>RI</td>
<td>Rhode Island College</td>
</tr>
<tr>
<td>Ugallo, Matthew M.</td>
<td>United States</td>
<td>NC</td>
<td>Elon University</td>
</tr>
<tr>
<td>van der Klooster, Maria Louise</td>
<td>Australia</td>
<td>Victoria</td>
<td>Deakin University</td>
</tr>
</tbody>
</table>
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
A Design Theory for Vigilant Online Learning Systems

M. Keith Wright, Ph.D.
Associate Professor of Information Systems
University of Houston–Downtown
Houston, Texas

ABSTRACT

There is now a preponderance of evidence suggesting that the types of online course management software (OCMS) used in purely online undergraduate college courses, do not meet the needs of younger immature students. These students often lack the learning skills necessary to succeed in such courses, nor do the popular OCMS include the vigilance mechanisms to guide such students to successful course completion in the absence of face-to-face human instruction. This paper explores the literature relevant to design theory, learning theory, decision support, and vigilance, to develop a design theory as a guide to software developers and academics studying how to design future systems for the immature student in accordance with the latest research.

INTRODUCTION

Online courses are usually thought of as one form of distance education. They typically involve the use of the world-wide-web and online course management software (OCMS) such as Blackboard or Moodle. However, for many years now, evidence has shown that typical OCMS have fallen short of their educational potential (See Demirkan & Goul, 2010; Kim & Bonk, al, 2006, Ioannou & Hannafin, 2008, Chua, 2008). In spite of this, the emerging cyber-space culture, as well as the accelerating demand for college degrees, made online courses a global pop-culture phenomenon in the early 21st century (Pappano, 2012; Rosenthal, 2013). By 2002, over three-quarters of all U.S. colleges and universities offered at least one online course (Molenda & Bichelmeyer, 2005). As of 2006, a third of all college students (more than seven million) were enrolled in online courses (Jaggars, 2006); and there were more than 90,000 online college courses. By 2010, 89% of public, four-year colleges offered at least one course online. (AACSB, 2010).

The summer of 2011 saw the first widely known MOOC (Massive Open Online Course) which was taught by Sebastian Thruna, the famous Stanford professor (Pappano, 2012; Rosenthal, 2013). By 2002, over three-quarters of all U.S. colleges and universities offered at least one online course (Molenda & Bichelmeyer, 2005). As of 2006, a third of all college students (more than seven million) were enrolled in online courses (Jaggars, 2006); and there were more than 90,000 online college courses. By 2010, 89% of public, four-year colleges offered at least one course online. (AACSB, 2010).

Starting in 2013, MOOCs came under fire in the popular press. A Baltimore Sun article reported that many MOOCs were poorly developed, and were merely, “turning good teachers into mediocre filmmakers... Where the incoherence and mindlessness enter the picture is the current thinking among university officials and digital-minded faculty that delivering a degree or college-level courses to anyone with an Internet connection will revolutionize U.S. higher education institutions.” (Grimmelmann, J. 2013, p.1).

Perhaps because of bad press, the growth rate of purely online courses began to decline in 2013. The 2013 annual College Board survey showed the annual enrollment growth rate of online courses to be only 9.3 %, the lowest in ten years (Seaman, 2013).

There is now much empirical evidence that purely online courses are not well suited for the average undergraduate online college student. For example, a University of Pennsylvania study, which examined the behavior of a million Coursera MOOC students from June 2012 to June 2013, found that only 4 % completed the classes, and that these students were disproportionately wealthy and well-educated (Perna et al, 2013). Furthermore, there is evidence that younger students just out of high school or community colleges are most at risk, in part because they lack effective learning skills. For example, the 2013 College Board survey found that the proportion of academic
leaders citing the need for more “discipline” on the part of online students increased from 80% in 2007 to 89% (Seaman, 2013). In that study the majority of university chief academic officers reported that online undergraduate courses have a lower retention rate than do classroom courses. Many of those online students spend their first two years in community colleges, where according to a 2013 New York Times article, they are significantly more likely to fall behind, fail or withdraw than are classroom students (Rosenthal, 2013). Such students were found less likely to earn degrees or transfer to four-year colleges. Among the reasons cited were that students, looking for shortcuts, were attracted to online asynchronous courses, because of their lack of time-management and language skills (Rosenthal, 2013).

Today’s typical online course management systems (OCMS), including Moodle, Blackboard, Coursera, Udacity, etc. are a poor fit for the needs of younger immature students. These students, whose undergraduate online college courses typically operate without day-to-day human instruction, simply log on to the OCMS, get their assignments, and try to complete and submit them, while isolated intellectually from classmates and course authors. These OCMS, were designed based primarily on how the system developers and administrators wanted to use the systems, rather than on what ordinary students need or want (Ioannou & Hannafin (2008)). As a result, these OCMS are simply rudimentary information systems, rather than vigilant learning systems: they do not need or want (Ioannou & Hannafin (2008)). As a result, students (Rosenthal, 2013). Such students were found less likely to fall behind, fail or withdraw than are classroom students (Dubin, 1978). In the tradition of Nagel (1961), design theories should be subject to empirical refutation. Accordingly, an assertion that possession of a particular set of attributes will enable a design product to meet its goals, can be verified only by building and testing the product. Furthermore, a hypothesis that a certain design process will result in a design product that meets its goals can be verified only by using that method to build the design product and testing to see if it satisfies its goals (Walls et al. 1992, pp. 41).

Therefore, we see from examining the theory building ideas set forth by Dubin, Simon, Nagel, and Walls: any information systems design theory (ISDT) has two aspects—the design product and the design process. A design process is “to so plan and proportion the parts of a machine or structure such that all requirements will be satisfied” (Walls et al. 1992, pp. 41). Further, the design product and the design process each produce a set of empirically testable hypotheses, which can be tested only after the object of the design product is built. However, the design process component of vigilant online learning systems design theory (VOLS) design theory is beyond the scope of our paper.

Walls et.al. (1992) proposed the components of an information systems design theory (ISDT) as a set of meta-requirements, and a set of meta-designs. Meta-requirements are written statements of the requirements for an entire class of designs—hence the prefix, “meta.” The meta-design theory involves goals achievement. For example, Simon describes an information system design theory (ISDT) as, “a body of ‘intelligently tough, analyti-
cal, formalizable, partly empirical, and teachable doctrine about the design process’” (Simon, 1982, pp. 132). Furthermore, an ISDT differs from a natural science theory in that a design theory involves goals achievement. For example, a natural science explanatory law is of the form “Y causes X.” On the other hand, an analogous design theory law is of the form “If you want to achieve goal X, then make Y happen” (Walls et al, 1992). Thus, a design theory prescribes what properties the design product should have, as well as the process of how the product should be built. Furthermore, Simon contended that design theories are composite theories, which integrate kernel theories from natural science, social science and mathematics. This integration is accomplished by the theory’s prescriptions, which state how to perform a design and why to do it that way (Dubin, 1976).

As well as satisfying the characteristics of any theory, a design theory has several additional characteristics. For example, Simon describes an information system design theory (ISDT) as, “a body of ‘intelligently tough, analytic, formalizable, partly empirical, and teachable doctrine about the design process’” (Simon, 1982, pp. 132). Furthermore, an ISDT differs from a natural science theory in that a design theory involves goals achievement. For example, a natural science explanatory law is of the form “Y causes X.” On the other hand, an analogous design theory law is of the form “If you want to achieve goal X, then make Y happen.” (Walls et al, 1992). Thus, a design theory prescribes what properties the design product should have, as well as the process of how the product should be built. Furthermore, Simon contended that design theories are composite theories, which integrate kernel theories from natural science, social science and mathematics. This integration is accomplished by the theory’s prescriptions, which state how to perform a design and why to do it that way (Dubin, 1976).

DESIGN THEORY

An information system design theory is a prescriptive composite theory that integrates theories from the natural sciences, social sciences, and mathematics (Walls et al, 1992; Dubin 1978; Simon 1981). It says how a design can be accomplished both feasibly and effectively. Furthermore, design theories are predictive social science theories, which, according to Dubin (1978), have the seven components shown in table 1.

<table>
<thead>
<tr>
<th>Properties</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Units</td>
<td>students, teachers, course designers, administrators</td>
</tr>
<tr>
<td>2 Law of Interaction</td>
<td>Increased system vigilance leads to increased learning.</td>
</tr>
<tr>
<td>3 System Boundary</td>
<td>online course management system in a university</td>
</tr>
<tr>
<td>4 System State</td>
<td>the design accomplished according to principals of vigilant information systems</td>
</tr>
<tr>
<td>5 Proposition</td>
<td>Increased system vigilance leads to increased student learning.</td>
</tr>
<tr>
<td>6 Empirical indicators</td>
<td>results of summative assessments of student learning binary indicator of whether or not the system was designed in accordance with the principles of vigilant information systems design</td>
</tr>
<tr>
<td>7 Testable Hypothesis</td>
<td>The mean student performance on summative tests of learning is significantly higher for the group using a vigilant online learning system than for the group using a traditional online course management system.</td>
</tr>
</tbody>
</table>

First, design theories have units whose interactions are the subject of interest. Second, design theories have propositions, and the laws of interaction among units, which are a subset of the propositions. Design theories have boundaries within which the theory is expected to hold. They have system states, which affect how the units interact. They also have empirical indicators related to the terms in the propositions. Finally, design theories have testable research hypotheses incorporating empirical indicators.

| Table 2 Example of Components of an IS Design Theory (ISDT) |
|------------------|------------------|
| Design Product | Meta-requirements products |
| 1 | Written description of the class (“meta”) of goals to which the theory applies. (e.g. data base systems should remove update anomalies) |
| 2 | Meta-design products |
| 3 | Kernel theories |
| 4 | Testable design product hypotheses |
| 5 | Testable design process hypotheses |
| 6 | Design process method |
| 7 | Kernel theories |
| 8 | Testable design process hypotheses |

A description of the procedure for design product construction. (The normal progression method: First, produce tables in first normal form, then second, third. etc.)

Theories from natural or social sciences governing design requirements. (e.g. relational calculus)

Used to test whether the meta-design products satisfy the meta-requirements. (e.g. theorems of relational calculus)

A description of the procedure for design product construction. (The normal progression method: First, produce tables in first normal form, then second, third. etc.)

Theories from natural or social sciences governing the design process itself. (May be different from those associated with the design product.)

Used to verify whether the design process method results in a product consistent with the meta-design. (E.g., the normal progression method produces seven tables in third normal form.)

Table 1 Examples of the Properties of a Predictive Theory of VOLS Development (Dubin, 1978)
LEARNING THEORY

Kolb's theory pertains to vigilant online learning systems (VOLS) and can be divided into two broad areas—learning theory and decision support system (DSS) theory. Although there are many published papers on DSS software, there have been few in the area of vigilant computerized learning software. However, there are now computerized measurements of learning style. The roots of learning style research go back almost eighty years, in the three similar streams of Lewin, Dewey, and Piaget. The Lewin school believes that learning is best understood and facilitated as an integrated process that begins with immediate experience followed by collecting observations about that experience (Lewin, Kolb, 1984). The learner then analyzes the data to form conclusions which provide feedback from which learners use to modify their behavior and choose new experiences. Lewin and his followers believed that much individual and organizational inefficiency could be traced ultimately to a lack of adequate feedback processes. "This inefficiency results from an imbalance between observation and action, either from a tendency for individuals and organizations to emphasize decision and action at the expense of information gathering, or from a tendency to become bogged down by data collection and analysis." (Lewin, Kolb, 1984, pp. 223). On the other hand, Dewey's model of learning is similar to the Lewin's, although Dewey makes more explicit the developmental nature of learning implied in Lewin's conception of it as a feedback process. Dewey described how learning transforms the impulses, feelings, and desires of a concrete experience into higher order purposeful action (Lewin, Kolb, 1984). Dewey believed in the emphasis on learning as a dialectic process integrating experience, concepts, observations, and action.

Piaget drew upon the work of Lewin and Dewey, as well as his own exhaustive study of child behavior, to create a learning model mirroring his conception of the process of scientific discovery (Piaget, Flavell, 1966). Piaget described mental maturation as it moves from the concrete phenomenal view of the world in infancy, to the adult's abstract constructionist view. For Piaget the key to learning lies in the mutual interaction of two processes, the accommodation of old concepts to new experience, and the assimilation of new experience into old concepts (Piaget, Flavell, 1966). Cognitive growth from concrete to abstract thought should be accomplished through a gradual transition between assimilation and accommodation, occurring in successive stages, each of which incorporates experience into a new, higher level of cognitive functioning.

Piaget is credited for what is now called the Constructivist Learning Approach. Constructivism encourages the student to create his or her own personal mental models, and encourages hands-on problem solving. Constructivism suggests that learning should be accomplished through assimilation of prior student experience, and that students should be encouraged to analyze, synthesize, and derive information (Piaget, Flavell, 1966). It encourages frequent feedback and other teaching methods that enable self-directed learning. Constructivism draws upon two key learning paradigms in education: the cognitive and the affective. The affective approach simulates the way in which humans think and apply knowledge. Some psychologists believe that this approach is a requirement for high-quality online learning systems (Simmering & Posey, 2009).

Recent cognitive learning approaches include scaffolding, fading, coaching, and meta-cognitive support. Scaffolding provides support to novice learners when concepts and skills are being introduced. Fading is the gradual removal of scaffolding as the learner becomes increasingly competent. Meta-cognitive support is information given to learners to improve awareness of their ability to understand, control, and manipulate how they learn (Potts and Gallagher, 2012). The situative paradigm takes a social perspective—where help and guidance from peers and instructors are considered most important to learning (see Ahmad & Lajoie, 2001; Greeno & Hall, 1997; Hall & Greeno, 2008; Alavi, 1994). Thus, there is reason to assert that a VOLS should provide multiple communication channels for different learning sources, including peers, instructors, subject matter experts, and other learners.

Further, constructionism implies that a VOLS, should continually explore students' prior experiences and assumptions, and then help them search for learning objects (IEEE, 2008b; OEDb, 2007) that will help connect new concepts to that experience. Effective classroom instructors do this as a matter of course. For example, experienced classroom computer science instructors know they may confuse students if they introduce object-oriented programming as a style of programming that uses inheritance and polymorphism. A vigilant instructor however can easily determine a student's current cognitive frame of reference (CFOR) by asking about their prior experience. For example, if the student knows nothing of polymorphism and inheritance, the vigilant instructor searches for a more appropriate analogy. If the student has some programming background, then the vigilant instructor may choose to introduce object-oriented programming simply as a style of programming that can result in reusable code or that can be designed to be easier for the maintenance programmer to read, understand, and modify. We propose that a vigilant online learning system (VOLS) facilitate student learning in the same manner—by following a student's CFOR at each stage in the learning process.

By the end of the 20th century, researchers had synthesized and expanded the original works of Lewin, Dewey, and Piaget to what is now known as experiential learning theory (ELT) (Kolb, 1984). ELT hypotheses that learners increase their knowledge in one or more of the four stages shown in table 3. Over the years, these four stages have come to be known as Kolb’s learning cycle (Kolb, 1984). It was ELT that spawned Bloom’s taxonomy of learning objectives (Bloom, 1956), which divides educational objectives into three domains: cognitive, affective, and psychomotor. Within the domains, learning at the higher levels is dependent on having attained prerequisite knowledge and skills at lower levels. The goal of Bloom’s taxonomy was to motivate educators to focus on all three domains.

Kolb (1984) proposed that individuals have a dominant learning style, which can be thought of as preferences for combinations of the various modes of experiential learning shown in table 3. Kolb argued that, although most of us have a dominant yet mostly unconscious learning style; to a certain extent, we can choose which style to use at any given time—resolve cognitive tension by suppressing one style while focusing on the other. There are now assessments of learning style: the most noted being the learning style inventory (Kolb, 84). This instrument has been used to identify four learning styles, Diverging, Assimilating, Converging and Accommodating.

We argue that a VOLS should support mechanisms to elicit the student’s dominant learning style, make him aware of it, and support his or her conscious choice of learning objects matching the preferred real-time learning style. Consider the following examples of how a VOLS could leverage a student’s learning style. Suppose the student is faced with the following case related to the ethics of computer programming:

Assume you are a programmer on your last few days of a time-and-materials contract with your client. You have been asked to repair a major defect in one of the system modules you developed. Further, suppose that you have discovered the following possible repair options:

Option 1 will require little of your time, but the repair will last only until the next scheduled complete system restart, a month after you are to begin work for another more lucrative client.

Option 2 will require almost all your remaining current contract time, but the repair will be permanent.

However, you feel that your resulting lack of spare time will prevent you from taking on any new small assignments on your current contract, and may create the opinion amongst your peers that your technical skills are lacking.

Which option should you choose and why?

If the student prefers a diverging style, his dominant learning abilities are concrete experimentation (CE) and reflective observation (RO). He is best at viewing concrete situations from many different points of view. He performs well in situations that call for generation of ideas, perhaps in a brainstorming session. In formal learning sit-

Table 2

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. (CE) Concrete experience engagement</td>
<td>The learner involves themselves fully, openly, and without bias in new experiences.</td>
</tr>
<tr>
<td>2. (RO) Reflective observation</td>
<td>The learner reflects on and observes their experiences from many different points of view.</td>
</tr>
<tr>
<td>3. (AC) Abstract conceptualization</td>
<td>The learner creates concepts that integrate their observations into logically sound theories.</td>
</tr>
<tr>
<td>4. (AE) Active experimentation</td>
<td>The learner tests their theories by making decisions and solving problems.</td>
</tr>
</tbody>
</table>
A Design Theory for Vigilant Online Learning Systems

M. Keith Wright

A Design Theory for Vigilant Online Learning Systems

meta-requirements: products derived from experiential learning theory

Meta-requirements products derived from Experiential Learning Theory

Table 4: Elements of a Design Theory of Vigilant Online Learning Systems: Meta-requirements Products Derived from Experiential Learning Theory

| MR1 | The system should provide the ability to detect student learning style. |
| MR2 | The system should make student aware of this dominant learning style. |
| MR3 | The system should support the conscious student choice of pedagogical material matching his dominant learning style. |
| MR4 | System should facilitate the presentation of ordered sequences of the four activities in Kolb’s learning style. |
| MR5 | The system should facilitate collaborative learning with other students, professors, field experts, internet communities of interest, etc. |
| MR6 | The systems should support scaffolding, fading, and coaching. |
| MR7 | The system should periodically survey students to determine their up to date cognitive frames of reference. |

Table 5: Elements of a Design Theory of Vigilant Online Learning Systems: Meta-design products derived from experiential learning theory

| MD1 | Index to web learning objects tagged according to learning style compatibility. |
| MD2 | Web crawler to search, index, and tag learning objects according to learning style compatibility. |
| MD3 | API to Kolb’s learning style inventory. |
| MD4 | Knowledge management API. |
| MD5 | API to groupware for collaborative learning. |

Table 6: Elements of a Design Theory of Vigilant Online Learning Systems: Examples of Testable Hypotheses Derived from Experiential Learning Theory

| H1 | It is feasible to design a system to accommodate detection of student learning style, etc. |
| H2 | Students using a systems that make them aware of their dominant learning style will perform better on summative assessments than students using a system that does not make students aware of their learning style. |
| H3 | Students using a system offering them the opportunity to perform activities using learning tools tailored for all four phases of Kolb’s learning cycle will perform better on summative assessments than students using a system that does not offer them such activities. |
| H4 | Students using a system supporting asynchronous collaborative learning will perform better on summative assessments than students using a system that does not facilitate asynchronous collaborative learning. |
| H5 | Students using a system with scaffolding and fading will perform better on summative assessments than students using a system without scaffolding and fading. |
| H6 | Course authors using a system that associates students, learning style, and assessment performance will be more satisfied than course authors using a system that does not contain this feature (because they will be able to better target their learning content to the course audience). |

meta-requirements: products derived from Experiential Learning Theory. Table 6 lists the testable hypotheses derivable from these design products.
A Design Theory for Vigilant Online Learning Systems

M. Keith Wright

A Design Theory for Vigilant Online Learning Systems

Journal of Learning in Higher Education

new information about the evolving state of each student’s cognitive frames of reference, as well as new learning opportunities appearing continuously cyber-space. We contend that a VOLS should facilitate user template shifting, which in turn could enable the identification and shaping of their related issues. A VOLS design, similar to what Walls et al. (1992) proposed for a vigilant EIS, should model issues as attention organizers, where issues cause or threaten to affect student learning interests, as well as the interests of all other types of system users (e.g. course authors, administrators, monitors).

We propose that a VOLS can model issues in a manner analogous to the environmental scanning process described by Dutton and Webster (1988), where issues were defined as events, developments, or trends which have a potential consequence for an organization, and which may be identified as either threats or opportunities. See also Jackson and Dutton (1988; Heath & Nelson, 1986; King, 1987). We contend that a vigilant online learning system (VOLS) should incorporate features of an executive information system, where the organization is the university, and the “executives” are the system users, including students. Furthermore, we contend that a VOLS should facilitate the management of each student’s learning issues as well as strategic issues for the university, department, class, or course.

We argue that, in turbulent environments such as a large online undergraduate college classes, the decision-making process is approximated by the participants as a process of attention to issues with varying and shifting priorities. Issues are dynamic entities that evolve over time. They go through a life cycle from birth to death, which consists of three stages: discovery, maturity, and fading (Walls et al., p. 49). According to King (1987), issue management involves identifying an issue, dealing with the way it affects stakeholders interests, and influencing its evolution to the maximum cost/efficiency. Facilitating and managing the issue life cycle has been suggested as a requirement of a vigilant information system (Walls et al., 1992).

El Sawy and Pauchant (1988) described how organizational issues tracking and decision making operational via the concepts of templates, triggers, and twitches. It was said that decision makers perceive an issue through a cognitive frame of reference, which they termed template. The process of environmental scanning was represented by changes in these templates, which they termed twitch.

That study concluded that the management process of environmental scanning (template switching) could be improved by stimulating and managing the process of template shifting. We contend that a VOLS should improve the learning of ordinary online undergraduate college students (and entire classes) by facilitating and managing the process of template shifting in regards to learning objectives. Similarly, we argue that a VOLS should improve the decision making of policy makers, course authors, and system administrators by facilitating and managing the process of template shifting in regards to policy formation.

In the El Sawy & Pauchant (1988) study, the organizational issue explored was the business potential posed by the (then emerging) cellular telephone market. The decision maker’s CFORs were elicited periodically from a group of decision makers. Template components included a set of verbal descriptions (constructs) and bipolar dimensions that described the plot, or theme of the template. The template constructs were things like whether or not the market would perceive cell phones to be only toys; or if they would be reliable; or how much they would cost, etc. A trigger is a stimulus which impinges upon a template and which may cause it to twitch. A trigger was described by its information, source, and latency. For example, a trigger for a university administrator might be information suggesting that a Pascal programming class can no longer be competitive in the market. A trigger for a student might be the realization that his learning style suggests he join an internet community of interest, or new knowledge of which job skills are most in demand. An other student trigger might be the result of an exam score. A trigger’s source denotes where the information was obtained. Its latency is the extent to which a trigger has interaction effect with future triggers. A highly negative latency means the trigger has stimulative effects on template shifting in the presence of future triggers. Postive latency means the trigger has a temporary inhibiting effect. In other words, a latent trigger may be one that shows its effects only in the future. A twitch is a change in a template caused by a trigger. A twitch contains a descriptor, a magnitude, and drivers. The El Sawy & Pauchant study identified the following three basic types of twitch:

- substitution twitches, which add a new construct to the template and/or drop an existing construct; and
- articulation twitches, which combine two existing constructs to form a new construct and break an existing construct into two new constructs; and
- twitching twitches, which change the orientation and/or magnitude of positioning on an existing construct.

The El Sawy paper concluded that, “given that the explicit operationalization of template twitching is feasible, the possibility of a form amenable to computer-based storage and processing, it would be a fruitful venture to build an expert system for the group tracking of emerging issues” (El Sawy & Pauchant, pp. 461).

In summary, the decision support literature suggests the environmental tracking process, and hence decision-making, can be improved by helping decision makers manage the issue tracking process. We contend that a VOLS should incorporate these features, and that doing so could improve student learning as well as the tactical decision making of all other types of VOLS users.

To help clarify the concepts of issues tracking and templates, below are some examples of templates that might be developed for a particular VOLS. Accordingly, each template construct describes a part of the paradigm through which an individual (or group) perceives the external environment. These constructs can be thought of as ideas that might influence that person’s decision-making. Table 7 represents a possible template for an undergraduate college student. It was derived from the model of e-learning success proposed by Holspan & Lee (2006, pp. 74). Their study student found the six constructs in table 7 to be the most important predictors of student satisfaction and/or success. On the other hand, table 8 shows a template representing perceptions of a student’s dominant learning style. This perception could affect the choice of student learning content. These tables:

<table>
<thead>
<tr>
<th>Table 7</th>
<th>Elements of a Design Theory of Vigilant Online Learning Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 low ← GPA</td>
<td>5 high</td>
</tr>
<tr>
<td>2 low ← Course load</td>
<td>6 low</td>
</tr>
<tr>
<td>3 low ← Preparatory performance</td>
<td>7 low</td>
</tr>
<tr>
<td>4 low ← Technical</td>
<td>8 low</td>
</tr>
<tr>
<td>5 low ← Study habits</td>
<td>9 low</td>
</tr>
<tr>
<td>6 low ← Life style</td>
<td>10 low</td>
</tr>
<tr>
<td>7 low ← Online learning experience</td>
<td>11 low</td>
</tr>
<tr>
<td>8 low ← Attitude</td>
<td>12 low</td>
</tr>
</tbody>
</table>

Table 7: Elements of a Design Theory of Vigilant Online Learning Systems.
perceptions could be of a course monitor, course author, student, or the VOLS itself. Table 9 shows a template representing factors influencing how students might perceive their own academic performance. This kind of template could affect student decisions. Table 10 shows a template concerning an instructor’s perception of a student’s performance. Finally, Table 11 depicts factors influencing a policy maker’s perception of the issue of decreasing course enrollment. (Note that these particular templates are not part of a design theory. They are merely examples of one possible VOLS design that is consistent with VOLS-DT.)

However, the concept of vigilance typifies a much more active, alert and action-directed capability than merely issues tracking. There must also be the capability for decision makers to act even when rapid feedback is not available. Thus, a vigilant online learning system should have both closed loop and open loop control mechanisms (Walls et al, 1992). We propose that open loop control can be achieved by a simple time-out heuristic that could be elicited from system policy makers. Such a heuristic could simply state that there a many possible individual designs consistent with a design theory, perhaps it would be instructive at this point to sketch one possible design. (See figure 1.)

VOLS-DT calls for systems with several types of users, including course authors, system administrators, course monitors, and students. Course monitors are agents that intervene in the learning process only sporadically on an exceptional basis. These agents could be course authors, course administrators, or organizational policy makers.

The system designed in figure 1 controls the learning process, and consists of at least three primary subsystems, the I/O processor, the inference engine, and the ETL (extract, transform, and load) module. This module extracts environment information from the I/O

<table>
<thead>
<tr>
<th>Table 8</th>
<th>Meta-design product Derived from Vigilance theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning Styles Template</td>
<td></td>
</tr>
<tr>
<td>1 low ← Diverging → high</td>
<td></td>
</tr>
<tr>
<td>2 low ← Assimilating → high</td>
<td></td>
</tr>
<tr>
<td>3 low ← Accommodating → high</td>
<td></td>
</tr>
<tr>
<td>4 low ← Converging → high</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 9</th>
<th>Meta-design products Derived from Vigilance theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psycho-social Template</td>
<td></td>
</tr>
<tr>
<td>1 low ← grade anxiety → high</td>
<td></td>
</tr>
<tr>
<td>2 low ← confidence in studying ability → high</td>
<td></td>
</tr>
<tr>
<td>3 low ← experience with subject matter → high</td>
<td></td>
</tr>
<tr>
<td>4 low ← confident with subject → high</td>
<td></td>
</tr>
<tr>
<td>5 low ← Facility with language → high</td>
<td></td>
</tr>
<tr>
<td>6 low ← Confidence in finances → high</td>
<td></td>
</tr>
<tr>
<td>7 low ← Test anxiety → high</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 10</th>
<th>Meta-design product Derived from Vigilance Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Performance Template</td>
<td></td>
</tr>
<tr>
<td>1 low ← Formative assessment results → high</td>
<td></td>
</tr>
<tr>
<td>2 low ← Summative test results → high</td>
<td></td>
</tr>
<tr>
<td>3 low ← Assignment lag time* → high</td>
<td></td>
</tr>
<tr>
<td>4 low ← Schedule compliance** → high</td>
<td></td>
</tr>
<tr>
<td>5 low ← Study habits → high</td>
<td></td>
</tr>
<tr>
<td>6 low ← Learning process cycle time*** → high</td>
<td></td>
</tr>
</tbody>
</table>

* Assignment lag time is the time that elapses between the receipt of a particular assignment and the time when work begins.
** Schedule compliance is a measure of the extent to which a student tends to follow the course schedule.
*** Learning process cycle time is the mean time a student takes from the start of a learning module to its successful completion.

In review, we have discussed the meta-requirements and meta-design products of a theory of design we call vigilant online learning systems design theory (VOLS-DT). Because there are many possible individual designs consistent with this theory, perhaps it would be instructive at this point to sketch one possible design. (See figure 1.) VOLS-DT calls for systems with several types of users, including course authors, system administrators, course monitors, and students. Course monitors are agents that intervene in the learning process only sporadically on an exceptional basis. These agents could be course authors, course administrators, or organizational policy makers.

ONE POSSIBLE VOLS DESIGN

In review, we have discussed the meta-requirements and meta-design products of a theory of design we call vigilant online learning systems design theory (VOLS-DT). Because there are many possible individual designs consistent with this theory, perhaps it would be instructive at this point to sketch one possible design. (See figure 1.) VOLS-DT calls for systems with several types of users, including course authors, system administrators, course monitors, and students. Course monitors are agents that intervene in the learning process only sporadically on an exceptional basis. These agents could be course authors, course administrators, or organizational policy makers. The system designed in figure 1 controls the learning process, and consists of at least three primary subsystems, the I/O (input/output) processor, the inference engine, and the ETL (extract, transform, and load) module. This module extracts environment information from the I/O

<table>
<thead>
<tr>
<th>Table 11</th>
<th>Meta-design product Derived from Vigilance Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Enrollment Template</td>
<td></td>
</tr>
<tr>
<td>1 low ← University enrollment → high</td>
<td></td>
</tr>
<tr>
<td>2 low ← Local population → high</td>
<td></td>
</tr>
<tr>
<td>3 low ← Course demand → high</td>
<td></td>
</tr>
<tr>
<td>4 low ← Population income → high</td>
<td></td>
</tr>
<tr>
<td>5 low ← Local area network bandwidth → high</td>
<td></td>
</tr>
<tr>
<td>6 low ← University budget → high</td>
<td></td>
</tr>
<tr>
<td>7 low ← Faculty quality → high</td>
<td></td>
</tr>
<tr>
<td>8 low ← Student quality → high</td>
<td></td>
</tr>
<tr>
<td>9 low ← Student job placement → high</td>
<td></td>
</tr>
<tr>
<td>10 low ← Student retention → high</td>
<td></td>
</tr>
<tr>
<td>11 low ← Facilities quality → high</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 12</th>
<th>Elements of a Design Theory of Vigilant Online Learning Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meta-requirement product Derived from Vigilance Theory</td>
<td></td>
</tr>
<tr>
<td>MR8 A VOLS should support issue representation in the form of triggers, templates and switches.</td>
<td></td>
</tr>
<tr>
<td>MR9 A VOLS should support both open and closed loop control.</td>
<td></td>
</tr>
<tr>
<td>MR10 A VOLS should support the issue management life cycle.</td>
<td></td>
</tr>
<tr>
<td>MR11 A VOLS should support elicitation and maintenance of heuristics from policy makers, course authors, system administrators, and students.</td>
<td></td>
</tr>
<tr>
<td>MR12 A VOLS should support the learning and decision making of different types of users including course administrators, system administrators, course monitors, and students.</td>
<td></td>
</tr>
<tr>
<td>MR13 A VOLS should derive traceable recommendations from inferences drawn from its evolving internal knowledge base.</td>
<td></td>
</tr>
<tr>
<td>MR14 A VOLS should use heuristics to take independent actions (such as course content selection) when necessary.</td>
<td></td>
</tr>
<tr>
<td>MR15 A VOLS should facilitate periodic monitoring of proposed actions in response to directives.</td>
<td></td>
</tr>
<tr>
<td>MR16 A VOLS should facilitate the tracking of the resolution of a problem derived from an issue.</td>
<td></td>
</tr>
<tr>
<td>MR17 A VOLS should facilitate the mandatory elicitation and maintenance of all template information.</td>
<td></td>
</tr>
</tbody>
</table>
A Design Theory for Vigilant Online Learning Systems

M. Keith Wright

12

Journal of Learning in Higher Education

13

to promote interoperability between e-learning systems.

Instructional Management Systems project (IMS, 2007).


structures for storing ratings of e-learning system sources.

The choice of DOMs should be configurable by the sys-

tem administrator, and would include models such as the

Shareable Content Object Reference Model (SCORM),

which supports content portability via extensive catalogu-

ing metadata (Boehl, Schellhase, and Sengler & Wi-

nan 2002). Another possible DOM might be the IEEE

Learning Technology Standard Committee (LTSC) refer-

ence model, IEEE P1484.1. This model has five lay-


ers, triggers, learning objects, expert heuristics, and links
to cyber-space learning objects.

After The VOLS extracts and stores information from ex-

perts such as professors, practitioners, course authors, and

administrators; the inference engine facilitates the learn-

ing process as follows. First, it adds reads real-time state

information from the environment (including that from all

users) to its knowledge base. Then it draws inferences, which

it translates, into helpful recommendations, directives,
instructions, etc. output to the appropriate users

and knowledge bases. Triggers would impinge upon the

VOLS, as it scans the environment. These triggers include

student assessment results, internal policy directives, and

templates obtained from user surveys.

Note that such surveys are of vital importance to a VOLS,

which by definition, operates mostly without a human

intervention. These surveys are transformed into tem-

plates that represent users’ cognitive frames of reference.

Thus, because a VOLS would be designed to replace many

of the soft skills of effective human instructors, the user

surveys should be mandatory. Over time, the VOLS,

may find that a user’s (or group’s) cognitive frames of reference

have twitched, creating issues. The VOLS then tracks

these, and if one becomes potentially counter-productive,

then an alert directive would be issued to the appropri-

ate user(s). Then these directives would be used to select a
course of action, which in turn would affect the learning
environment. If, in the opinion of the VOLS or of a course

monitor, this action has the potential to affect other users

negatively, an action authorization request would go to a

human system administrator. This control architecture is

similar to what was proposed for vigilant information sys-

In review, this paper has thus far discussed examples of
three of the four elements of the design meta-products
portion of a complete theory of vigilant online learning
system design. (Note that the design meta-process com-
poment is beyond the scope of this paper.) The first ele-
ment was the kernel theory. The second element was the

set of meta-requirements derived from the kernel theory.
The third element discussed was the set of meta-design
products (or simply meta-designs) which specify the types
of algorithms and data structures needed for the class of
designs.

The final design product to be discussed here is a set of
testable hypotheses generated by the VOLS. As discussed earlier, any design theory, in the

tradition of Nagel (1961) and Dubin (1978), should gener-
ate empirically testable hypotheses. These are tested when a

system is physically constructed and acceptance tested.

As you may recall, a design theory is a prescriptive synthe-

sis of kernel theory, which says how a design process can

be carried out in a feasible effective manner. Thus, these
testable hypotheses are merely simple transformations of
the meta-requirements. Table 14 shows a few examples.

<table>
<thead>
<tr>
<th>Table 13</th>
<th>ELEMENTS OF A DESIGN THEORY OF VIGILANT ONLINE LEARNING SYSTEMS</th>
<th>META-DESIGN PRODUCTS* DERIVED FROM VIGILANCE THEORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>MD6</td>
<td>template data structure including issue descriptors, multiple critical indicators, directives, and responses</td>
<td></td>
</tr>
<tr>
<td>MD7</td>
<td>expert system to monitor and facilitate student learning via alerts, directives, triggers</td>
<td></td>
</tr>
<tr>
<td>MD8</td>
<td>link of information sources to critical indicators **</td>
<td></td>
</tr>
<tr>
<td>MD9</td>
<td>data structure for template history</td>
<td></td>
</tr>
<tr>
<td>MD10</td>
<td>template sharing among stakeholders, including concurrent access, and atomic transactions</td>
<td></td>
</tr>
<tr>
<td>MD11</td>
<td>communication of responses to directives</td>
<td></td>
</tr>
<tr>
<td>MD12</td>
<td>directive status data structure</td>
<td></td>
</tr>
<tr>
<td>MD13</td>
<td>suggestion data structure</td>
<td></td>
</tr>
<tr>
<td>MD14</td>
<td>system command data structure</td>
<td></td>
</tr>
<tr>
<td>MD15</td>
<td>expert system engine, including expert knowledge extractor</td>
<td></td>
</tr>
</tbody>
</table>

*Data structures and algorithm types

**A critical indicator is a parameter that describes an issue, and can help track it.

<table>
<thead>
<tr>
<th>Table 14</th>
<th>EXAMPLES OF TESTABLE DESIGN PRODUCT HYPOTHESES DERIVED FROM VIGILANCE THEORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>It is feasible to design an online course management system to accommodate issue representation in the form of triggers, templates, and switches.</td>
</tr>
<tr>
<td>H2</td>
<td>It is feasible to design an online course management system to accommodate environmental scanning techniques that have been proposed for EIS.</td>
</tr>
<tr>
<td>H3</td>
<td>Students using a VOLS will be more satisfied than students using a traditional course management system.</td>
</tr>
<tr>
<td>H4</td>
<td>It is feasible to design an expert system capable of monitoring and facilitating student learning.</td>
</tr>
<tr>
<td>H5</td>
<td>Students using a VOLS will perform better on summative assessments than students using a traditional course management system.</td>
</tr>
<tr>
<td>H6</td>
<td>Students using a system that accommodates the issue management life-cycle, will be more satisfied than students using a system that does not accommodate these features, etc.</td>
</tr>
<tr>
<td>H7</td>
<td>Course monitors using a system that supports the issue management life cycle will be more satisfied than course monitors using a system that does not support these features (because they will be able to more quickly and better target their responses to exception conditions), etc.</td>
</tr>
</tbody>
</table>

Figure 1

One Possible Design of a Vigilant Online Learning Systems

VOLS

Assessments

Instructional Engine

Learning objects

Experts

Enforcement/operative actions/policy

Global Environment

Figure 1

A Design Theory for Vigilant Online Learning Systems

Spring 2016 (Volume 12 Issue 1)
A Design Theory for Vigilant Online Learning Systems

M. Keith Wright

In addition to recommending student actions, a VOLS would replace many of the soft skills of an effective undergraduate classroom instructor. Such instructors leverage their knowledge of human learning, via a dialectic process, to develop ideas about how individual students learn, and then communicate with them in a way that facilitates their individual learning process. The paper argued that, although there has been a great deal of study of the human learning process, it has not been leveraged by traditional online course management systems. Nor has there been a much work on a design theory to guide VOLS research. As suggested by Simon (1981), and Walls et al. (1992), we feel that the development of rigorous information systems design theory is possible, and should include both meta-design products and meta-design process components — one traceable to the kernel theory.

Another contribution of this paper is its synthesis of much of the relevant kernel theory — including decision support systems, organizational issues tracking, learning theory, and vigilant information systems.

This paper provides a starting point for a widely accepted VOLS design theory. Future research could complete the theory by expanding the meta requirements and meta design processes so as to include the best ideas from experts in higher education, psychology, sociology, computer science, etc. It is hoped that the paper will provide a means for researchers to envision the possibilities of VOLS, and a means to study them systematically.

Especially important will be the integration of new learning objects into today’s turbulent open education environment. This research will undoubtedly overlap with the study of knowledge management systems (Alavi & Leidner, 2001), and their interface to online learning systems and to the semantic web (Maedche & Staab, 2001). Also very important will be detailed descriptions of the design process component of a VOLSĐT — a subject beyond the scope of this paper. Future research must determine more precisely how to leverage the cognitive frames of references of all types of VOLS users, not just students. Another line of future research could be the expansion of VOLSĐT to include meta processes of meta design products of other researchers have proposed (For one example see Petris & Galluppe (2012)). Also needed will be longitudinal research involving building prototypes: VOLS and then testing them against online learning success criteria such as presented in Holtsapple & Lee Post (2006).

We hope that this paper has molded existing literature into components of a well-constructed design theory of vigilant online learning systems. These kind of systems would be designed for the ordinary undergraduate online college student – the student yet to mature into the self-taught learner that does well with purely online courses. This paper, to the author's knowledge, is the first to address the design of such systems. We hope that it will lead to the construction of systems that will fill some of the vacuum created by college courses absent human instructors.

We feel that purely online courses for the ordinary undergraduate college student will never as effective as classroom courses led by excellent instructors. However, we think that today's OCMS can be greatly improved, given the right investment. We hope that this paper has contributed at least a small advancement in online course management systems design.

REFERENCES


SUMMARY

In summary, this paper began by reviewing the latest news concerning the state of online higher education in the U.S. The initial enthusiasm of administrators towards purely asynchronous online undergraduate education has begun to diminish in light of reports of high dropout rates and poor learning outcomes. The paper then argued that one reason for these unfortunate results is the limited capabilities of traditional course management systems such as Blackboard, Moodle, Udacity, and Coursera. We argued that a vigilant online learning system (VOLS) would be more appropriate for younger immature online college students than would a traditional online course management system (OCMS) such as Blackboard or Udacity. A VOLS would learn about, and act upon student attributes that traditional OCMS ignore – attributes such as cognitive frames of reference, and learning style. In addition to functions of traditional systems, VOLS add the capability to facilitate (or eventually to replace) many of the soft skills of an effective undergraduate classroom instructor.

The paper then presented the classic definitions of design theory and vigilant information systems theory. These definitions revealed that design theories are composite theories based on kernel theories from the natural sciences, social sciences, and mathematics.

The paper then presented a theory of online course management systems design. This class of system designs was termed vigilant, to distinguish them from that of traditional course management systems. This theory consisted of a set of design meta-requirements, meta-design products, and testable design product hypotheses.

CONCLUSIONS AND CONTRIBUTIONS

In conclusion, it has become apparent that today’s popular course management systems such as Blackboard, Moodle, Coursera, and Udacity are not appropriate for the ordinary undergraduate college students. The author hopes that this paper will be a guide to software developers and academics who will study how to design and build the next generation of online course management systems, vigilant online learning systems. To our knowledge, this is the first paper to address this subject, and the first to use the term VOLS. In addition to functions of traditional system, a VOLS would learn about, and act upon student attributes that traditional online course management systems (OCMS) ignore — attributes such as cognitive frames of reference, and learning style. This paper extends the concept of recommender systems for higher education (Pausden, M. F. (2003). (Purisit, D. & Galluppe, B.).
DOES HOMEWORK REALLY MATTER FOR COLLEGE STUDENTS IN QUANTITATIVELY-BASED COURSES?

Nichole Young, Student  
Business Administration Program  
Ferrum College  
Ferrum, Virginia

Amanda Dollman, Student  
Business Administration Program  
Ferrum College  
Ferrum, Virginia

N. Faye Angel, Professor of Business  
Business Program  
Ferrum College  
Ferrum, Virginia

ABSTRACT

This investigation was initiated by two students in an Advanced Computer Applications course. They sought to examine the influence of graded homework on final grades in quantitatively-based business courses. They were provided with data from three quantitatively-based core business courses over a period of five years for a total of 10 semesters of data. The results indicated that graded homework grades were highly correlated with final course grades, but the paired t-test showed significant difference between the graded homework and final course grades. The R-squared value of .463 showed that graded homework accounted for a significant portion of the final course grade. This finding is important as instructors search for pedagogy that can positively impact final grades and facilitate necessary and timely progress toward graduation.

Keywords: homework, automaticity, practice, quantitatively-based courses, chunking

INTRODUCTION

This study was initiated by two students in an Advanced Computer Applications class who decided to study the influence of graded homework on final grades as their course research project. They had observed that students who completed their homework had better grades in their classes, but they wanted to statistically support this claim. And as the instructor, I concurred that the assumption was, in all likelihood, correct and provided them with several semesters of data. By investigating the data from multiple perspectives, they exposed some interesting results. As college students are entering higher education, increasingly unprepared or under-prepared, pedagogical techniques that can positively impact their learning need to be carefully examined. It is imperative that faculty continually explore ways to promote student learning and their progress toward graduation. Student retention and higher education graduation rates have become an urgent issue for students, parents, politicians, employers, and instructors.

LITERATURE REVIEW

Importance of Practice

The importance of assigning homework as a tool for practice continues to be debated at many levels of education. Refer to the meta-analysis conducted by Cooper, Robinson, and Patall (2006) for synthesis of research on homework. However, whether it is a baby learning to walk or a professional athlete honing his or her talents, practice is essential for them to master their skills. To be an accomplished musician or athlete means hours of practice...
for years. This situation is acknowledged and rarely ques-
tioned. Although “how” an individual learns, acquires knowledge, and retrieves it are still unclear, cognitive scientists are de-
veloping frameworks to understand these processes. (An-
derson & Lebiere, 1998; Bodie, Powers, & Fitch-Hauser, 2006; Buschke, 1976; Guoqi Li, 2013; Willingham, 2009; Zhang et al., 2012). Much of this research examines the importance of automaticity for acquiring increasing pro-
duced knowledge across the disciplines. Rodgers (2011) investigated the role of automatization for learn-
ing language skills in college students studying Italian. It found the “…only significant difference was between the Beginner and Advanced groups for comprehension…complex of verbal morphology eventually becomes automatic at high levels of proficiency.” (p. 313).

Looking at strategies or learning by drill, both involved practice. Bodie et al., 2005; Lassaline & Logan, 1993; Logan & Kapp, 1991; Delazer (2008) examined neurological changes in the various ar-
eas of the brain based on fMRI study. They found that training by drill is highly significant in improving the speed of recognizing words. (p. 843). Logan and Kapp (1991) found that although extended practice produced automatization in “alphabet rhinm-
e,” a single one-hour session of rote memorization pro-
duced the same level of automaticity. They suggested this finding had important implications for the practicality of achieving automatization. (Bodie, 1976). Study of the process of mastering each en-
evity in fact developing specific skills. However, their con-
tention is that in long-term development of a skill to the point of mastery, “there may be no substitute for extended practice” (Bodie, 1976; Lassaline & Logan, 1993) used a counting task involving practice for 13 sessions to deter-
mine when performance reached asymptote when exam-
nining the slope of the function of response latency to nu-
merosity. The asymptote was reached after session three. However, significant changes in the slope were apparent in the first session “which suggests that that automatiza-
tion was taking place.” (p. 565). Burszt (1982), Burszt (1976), and Willingham (2009) attributes this automatization to a process called chunking. They and others (Bodie, G.D., Powers, W.G., & Fitch-Hauser, M., 2006; Guoqi Li et al., 2013; Zhang, D et al., 2012) contend that significant chunking of individual pieces of information or data must be grouped together as one chunk of information that can be readily retrieved. This chunking is the result of repetitive practice. For ex-
ample, learning the word “practice” as one chunk instead of trying to put seven pieces of information together. The importance of this is that working memory is freed up which some contend is fixed. (Willingham, 2009). The result is more room for higher-
order operations and problem-solving. (Bodie, G.D. et al., 2006; Buschke, 1976; Guoqi Li, 2013) found that “chunking can increase memory capacity in an unlimited-
eder manner through training.” (p. 9). Zhang et al. (2012) found that chunking was a vital classroom tool in teaching students with math disabilities. Other studies showed that chunking has resulted in successful learning of both verbal and quantitatively-based concepts, many times in conjunction with other strategies. (Bodie, G.D., Powers, W.G., & Fitch-Hauser, M., 2006; Zhang et al., 2012).

## Homework and the College Student

Although there are numerous articles on the impact of homework on final course grades for college students, their methodologies are quite disparate. (Alonsoy, 1995; Bembenutty & White, 2012; Brender, 1996; Carrellage & Sasser, 1981; Chulkov, 2008; D’Souza & Maheshwari, 2010; Durr, 1999; Galyon, Blondin, Gorbes, & Williams, 2013; Kitsantas & Zimmerman, 2009; & Lazara, 2015) To further complicate the role that homework plays on fi-
nal grades in college courses, faculty at higher educational institutions assume that colleges/universities are responsible for their own learning (Brender, 1996) and should no longer have to be “spoon-fed.” And, certainly research schools have different priorities than non-university institutions. But with the increased democratization of higher education, students are entering colleges and uni-
versities ill-prepared to effectively complete their plan of study for graduation. A study conducted by the Educa-
tional Testing Service (Goodman, Sands, & Coley, 2015) found that of the 22 participating countries, American students scored near the bottom on nearly every measure from literacy to problem solving to numeracy. As an example of the dismal showing of American students “nearly two-thirds (64%) failed to reach this minimum level in numeracy.” (p. 12), which resulted in the United States placing 12th on this measure. The implications of these findings and our personal, everyday experiences in the classroom have resulted in faculty urgently exploring ways to help students succeed in college. The inclusion of homework in a under-prepared college student is encouraged by students not completing work outside of the classroom. Not only do students not study the recommended two hours out-
side of class for class, (p. 187) homework is reported to be completed in an average of 15 hours a week preparing for class. (Young, 2002). Yet, some faculty have become increasingly concerned about the impact of student monotonous weekly habits while completing assigned homework. (Kelley, 2011) An article in the Cor-
nell Chronicle (Kelley, 2011) described how the Faculty Senate at Cornell University passed a resolution that stu-
dents should not receive extra work over breaks. The reso-
lution strongly discouraged homework and projects that “necessitate…academic work for students” over breaks as they noted students to allow themselves to have rest and relaxation. (Rae, 2011) Nevertheless, there is a general as-
sumption that homework will assist students in success-
fully completing coursework and lead to gradation. Who is to say that homework can be an important method for increasing student self-regulation and as a result improved final grades. The investigations that included graded homework as a variable found that graded homework and final grades were positively correlated. D’Souza and Kelwyn (2010) studied the factors that influenced student performance in a management science course. Six variables, including graded homework, were identified. They ranged from student demographic characteristics, to student study behav-
ior which included the ability to set goals, to student self-
regulation (which included homework). “All homework were collected, graded by the instructor, and returned back to the students.” (p. 7). Although much of the homework was not of high quality, it still accounted for approximately 10% of the overall grade. (D’Souza & Kelwyn, 2010). Galyon, Blondin, Forbes, and Williams (2013) examined the influence of critical thinking and accuracy as well completion of homework on final grades. Ten questions were selected from each chapter assigned in the text. Stu-
dents completed the assignments and earned one point for each correct answer. Their findings were “Overall, accurate homework completion showed promise as an in-
tervention target for improving student performance and, at times, rivaled critical-thinking ability as the primary predictor of exam performance.” (p. 96). The study con-
ducted by Carrellage and Sasser (1981) compared pretest and posttest grades based on students having no home-
work versus having weekly homework assignments in a college algebra course. The homework assignments were graded and returned to the students. Pretest and posttest were given to determine if students receiving homework assignments received higher grades than those receiving no assign-
ments. “The findings of the t-test for the posttest results were significant only at the .08 level (t = 1.74, df = 28, p < .10) indicating that students receiving homework as-
signments are more likely to achieve those than those not receiv-
ing homework assignments” (p. 8).
rute review, the practice component is important to facili-
tate “embedding” the knowledge in working memory by
becoming familiar and comfortable with it resulting in quick
retrieval of chunks of information.

Limitations and Characteristics of the Study
As with all studies, this one has limitations and specific
characteristics that define it. These are identified below
for the purpose of placing the investigations into a clearer
context.
1. All courses comprising the data set were taught
by same instructor.
2. The instructional method was similar for all the
courses, e.g. problem-solving approach.
3. The homework was graded by the instructor.
4. Students repeating the course would be exposed
to the same homework.
5. Students may complete homework and not sub-
mit it for a grade.
6. Students may receive assistance with homework
from professor or other students.
7. Graded homework accounted for 5 – 10% of the
final grade.
8. Five years of data for fall and spring semesters
from three quantitatively-based courses (Bus 313 Man-
geaglance, Bus 330 Quantitative Methods of Management Science, and Bus 325
Advanced Computer Applications) were col-
lected for a total of 554 cases.
9. The attendance rate, for the courses in the study,
was very high and it was unusual for students to
be absent. Most of the absences are considered
“excused” and include such events as athletics and
college-sanctioned activities.
10. The homework assignments were paper gener-
ated versus online homework.
11. Homework was emphasized and, on occasion,
students were dismissed from class if homework
was incomplete.
12. Data Set and Variables
The data set consisted of 10 semesters of grades for three
quantitatively-based courses from fall 2010 until spring
2014. The three courses (listed above) were taught every
semester by the same instructor. The number of cases was
554.
Dependent variable: Final course grade: scale (ratio)
Independent variable: Homework grade: scale (ratio)

Statistical Procedures and Results
Several statistical methods were used to analyze the influ-
ence of graded homework on final course grade. The re-
sults are provided below with a brief explanation of each.

Pearson r
A correlation test was performed to determine if there was
a significant relationship between homework grade and fi-
nal course grade. With a correlation of .688, the relation-
ship between graded homework and final course grade
was significant at p < .000.

Scatterplot
A scatterplot visually shows the relationship between the
independent variable (graded homework grade) and the
dependent variable (final course grade). It can be noted
there is considerable variability around the regression line.
Refer to Figure 1.

Linear Regression
Linear regression was conducted to determine the pro-
portion of the final course grade that is influenced by
homework grade. The regression model was: Y = 48.289
+ .370x where Y represented the final course grade and
x represents the homework grade. R-squared of .463 in-
dicated that graded homework accounts for a significant
portion of the final course grade.

Paired t-test
A paired t-test was conducted to compare the indepen-
dent variable (homework grade) and the dependent vari-
able (final course grade). It was assumed that there would
be no statistical difference. However, the mean for the
homework grade was 69.4041 and for final course grade
was 73.3423. With a t = 4.382, the difference between
their means were significant at p < .000.

Bar chart
This comparison by letter grade is displayed in a bar chart.
Refer to Figure 2. With the exception of a letter grade of A
(final course grade between 90%–100%), the homework
grade was less than the final course grade.

Discussion
Although not just one factor contributes to a student’s
final course grade, this study clearly indicates that grad-
ed homework plays a significant role in a student’s final
course grade with an R-squared of .463. As shown in the
results, homework grade and final course grade were high-
ly correlated. This is consistent with extended practice via
graded homework facilitating the chunking of new infor-
mation, thereby, freeing up resources for other activities,
such as critical thinking for test taking, completing a high
quality, comprehensive projects, and improved decision-
making. This positive impact of satisfactorily complet-
ing homework on final course grade is also shown in the
scatterplot of homework grade in relation to final course
grade. Refer to Table 1. However, those who did not earn
a homework grade of at least 60% saw a major negative im-
pact of their final course grade (final course grade of less
than 60%). Refer to Table 2 for the bar chart that com-
pares homework grade to final course grade. This chart
shows that final course grade was higher than homework
grade with the exception of the letter grade of A.
The paired t-test showed that the means of the homework
grades and the final course grades were statistically signifi-
cant with the final course grade being the higher of the
two. The authors noted from the results of the paired t-
test that not only was increased accuracy of graded home-
work correlated with a higher final course grade, there was
a greater than a 1.058 increase in the final course grade for
every point scored on the homework grade. This finding
implies that completing homework at a high level of qual-
ity is an efficient and effective tool for student learning as
the correlation value of .662—the higher the homework
grade, the higher the final course grade.

A key to graded homework having a positive impact on
the final course grade is for students to understand the im-
portance of homework. It must be stressed by the faculty
or graduate assistants responsible for the course. Recom-
mendations for emphasizing the importance of home-
work include such activities as:
1. grade homework and return to the students,
2. make homework a proportion of the overall final
course grade,
3. check homework at the beginning of class with
appropriate consequences for uncompleted
homework,
4. encourage students to see instructor for assis-
tance with homework as needed,
5. schedule office hours to maximize the time that
faculty are available for student assistance,
6. place a statement in the syllabus about the impor-
tance of homework,
7. explain the impact of homework on final course
grade,
Does Homework Really Matter for College Students in Quantitatively-based Courses?

The results of this study are consistent with Galyon, Blondin, Forbes, and Williams (2013) findings that graded homework was a significant predictor of grades. As students continue to enter higher education under-prepared in quantitatively-based skills and standards must be maintained to advance toward graduation, experimentally with the impact of graded homework on final grades provides a viable option for improvement of final course grades. This state of a lack of math proficiency with our current students relates closely with students struggling with math disabilities. (Zhang, et al., 2012). If chunking, as the result of repetitive homework, has a positive effect on students who have developed a disdain for or anxiety of math, can efficiently overcome these conflicts, the solution may be relatively simple. As was indicated from the ETS report (Goodman, Sands, & Coley, 2015), it is imperative that American regain its educational strength for continued success professionally and personally for individuals and as a collective.

FUTURE RESEARCH

As Lehner, (2008) expressed in her study, students must have confidence to fully understand concepts of algebra. Certainly, the role of graded homework in developing confidence in students needs to be further explored. This is especially true in quantitatively-based courses. Math anxiety is real and destructive for student learning and by the time they arrive at college it has become difficult for many of our students, this would be a major step in performing satisfactorily in their classes. Although grading homework does consume resources—faculty grading time—the return on this investment may result in a substantial payoff—student retention and graduation. As software continues to be developed to grade assignments, this task will consume less of the faculty’s time while providing an efficient and effective tool for student learning.

REFERENCES


Kelley, S. (2011, March 17). Faculty Senate votes for no extra student work over breaks. Cornell Chronicle. Need more information


OVERVIEW

The 21st century workplace needs employees with critical thinking and problem solving skills. (Partnerships for 21st Century Skills, 2008a, 2000b). In fact, 2,115 managers rated “critical thinking” as the second most desirable skill set when it comes to employee development, talent management, and succession planning (AMA 2010). In addition, three out of four of these same managers surveyed in 2010, believed the skill set would become more important 3 to 5 years in the future – targeting 2015.

Isaksen and Akkermans (2011) point out that as the world has changed through innovation and technological progress, the ability to be creative and adapt has become an essential “survival” skill. In this sense, the ability to solve problems is becoming as foundational of a skill as written communication, math skills, and teamwork for employers (Boyer Commission, 1995). As organizations value these characteristics more and more, this valuation creates a new set of requirements for educational programs. At least two studies, “Principles for Good Practice in Undergraduate Education” (Chickering and Gamson, 1987) and “What Research Says About Improving Undergraduate Education” (AAHE, 1996), discuss the problem solving and creativity characteristics as components of a student learning environment. Specifically, these position papers point to characteristics desirable for quality instruction including: more active learning as well as integrating education with experience.

Business programs are not exempt from this change. In fact, the environment in which business schools operate has changed dramatically. Influential stakeholders such as accrediting bodies, employers, and students are generating new stresses on business schools to be more responsive to their needs; some of which are in conflict with each other. In a key 1988 report to the American Assembly of

DEVELOPING A CREATIVITY AND PROBLEM SOLVING COURSE IN SUPPORT OF THE INFORMATION SYSTEMS CURRICULUM

Ben Martz
School of Business and Social Sciences
Business Administration Department
Shepherd University
Shepherdstown, West Virginia

Jim Hughes
College of Informatics
Business Informatics Department
Northern Kentucky University
Highland Heights, Kentucky

Frank Braun
College of Informatics
Business Informatics Department
Northern Kentucky University
Highland Heights, Kentucky

ABSTRACT

This paper looks at and assesses the development and implementation of a problem solving and creativity class for the purpose of providing a basis for a Business Informatics curriculum. The development was fueled by the desire to create a broad based class that 1.) Familiarized students to the underlying concepts of problem solving; 2. Introduced students to problem solving and creativity techniques; and, 3. Could act as a foundational basis for the 2010 AIS Information Systems curriculum (Topi et al., 2010). One student learning goal of the class is to have students be able to describe at least five problem solving methods or activities. Results show students satisfied this short term goal and provide support for a claim of more long term learning. The paper ends with a discussion concerning the potential for integration of problem solving and creativity into a business information systems curriculum.
Developing a Creativity and Problem Solving Course in Support of the Information Systems Curriculum

Ben Martz & Jim Hughes

Table 1

Problem Solving & Creativity Techniques

<table>
<thead>
<tr>
<th>Technique</th>
<th>Review</th>
<th>Demo</th>
<th>Testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Hats Thinking</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Algorithms</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Analytical Hierarchy Process</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Blockbusting</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Boundary Examination</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Brainstorming</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Bug List</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Causal Diagrams</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Crawford Blue Slip</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Critical Success Factors</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Decision Matrix</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Decision Tree</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Duncker Diagrams</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Expected Value Table</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Fishbone Technique</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Five P's (Blanchard &amp; Peale)</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>
scientists believe we tap into these structures with thought processing techniques such as analogies and metaphors. Schank (1995) suggests a process called analogical mapping wherein the inquirer asks how the current problem is similar to other problems known by the subject. Conger’s (1995) Analogy / Metaphor technique uses analogy as a structured creativity inducing technique. Minsky (1988) reduces creativity to “that which allows us to replace one kind of thought with another.” The potential for this strategy has not been lost on real world problem solving groups. 3M’s “strategic stories” (Shaw, Brown, & Bromiley, 1998) and Shell Oil Company’s (Hiam, 1990) scenario planning methodologies originate from the concept that problem solving groups can learn from analogies.

In Seymour Papert’s problem solving world in Mindstorms, subjects developed models for problem solving by applying their current skills to the surrounding environment. The subject would then adapt their skills to enhance his or her solutions thereby acquiring new skills. This process of using current skills within a problem environment to develop new skills is what Papert (1980) termed appropriation. For our purposes, a PBL environment must encourage and enable its participants to “appropriate” new knowledge by using their current knowledge and skills. In summary, Problem Based Learning works by providing the student with an environment in which that student can create and store associated memories and meanings. Ideally, these experiences evolve into behaviors or decision making processes that can be recalled and used when needed. Ultimately, to create an effective Problem Based Learning environment, we are charged with 1.) Introducing a problem environment whereby the student can appropriate the skills and 3.) Helping students effectively process these skills as a structured creativity inducing technique. Minsky (1995) Analogy / Metaphor technique uses analogy as a structured creativity inducing technique. 3M’s “strategic stories” (Shaw, Brown, & Bromiley, 1998) and Shell Oil Company’s (Hiam, 1990) scenario planning methodologies originate from the concept that problem solving groups can learn from analogies.

The course was proposed in summer 2012; accepted as a pilot course by the University Curriculum Committee; and implemented in Spring 2013. The course format was two day per week for 75 minutes classes. Three tests, 10 homework assignments and one group presentation were designed into the format. A book, readings, in-class exercises, and PowerPoint presentations represented the materials for the course. The evaluation activities for the course included, three tests, 10 homework assignments, and one group presentation. Twenty students enrolled in the class in January; seven-teem completed the course and received a grade in May.

Research Methodology

The methodology undertaken here combines action science (Angry, et al., 1985) with the field and case study approaches (McGrath, Martin, & Kukla, 1984; Eisenhardt, 1989; Yin, 1993). The ultimate goal of this methodology, as with other action inquiry strategies, is to gather data and information for critical reflection (Ellis and Kuby, 2000). According to McGrath (1994), the field study “works within an ongoing natural system as unobtrusively as possible” (p. 157) to observe and gather its information. This compromise method is appropriate for this study because it 1.) Allows the system (class) to operate as it would naturally; 2.) Gathers the data as part of the class; and 3.) Recognizes that the active participation of the researcher may provide unique opportunities for observation and insights.

Instruments

Treffinger, Sley, and Ijassen (2008) reviewed 50 years of research and development on problem solving tools and processes. Based on that review, they argue that one of the keys to learning creative problem solving starts with the understanding of one’s own problem solving style. This idea was incorporated into the assessment of the class by looking for changes in problem solving style that may be attributable to the class. Two problem solving style instruments with extensive supporting research were adopted as pre- and post-test measures: CREATEX profile (CREAX, 2014) and Rowe and Mason’s Decision Style Inventory (Rowe & Mason, 1987).

In the current study, we asked all students to use the same parameters for evaluating their scores as one of three self-assessments in the first class. We asked all students to use the same parameters for the subject across four decision making styles; Analytical, Behavioral, Conceptual, and Directive. Each of these styles has a short anecdotal description that summarizes it. The subjects are able to compare their own results with Rowe and Mason’s results, collected and compiled from over 2000 people, which provides the basis for their book entitled: Managing with Style. Comparing one’s results to the averages, the subject can identify his or her dominant decision style and possibly a backup style. Rowe and Mason’s work goes much deeper as they work to combine and categorize the decision styles. In the end, no single decision style is declared superior to the others, but the DSI as a whole is used as a means of self-awareness for each student. The DSI assessment was completed by the students at the beginning of the class and again at the end. Any changes in decision style ratings could then be evaluated.

The course was proposed in summer 2012; accepted as a pilot course by the University Curriculum Committee; and implemented in Spring 2013. The course format was two day per week for 75 minutes classes. Three tests, 10 homework assignments and one group presentation were designed into the format. A book, readings, in-class exercises, and PowerPoint presentations represented the materials for the course. The evaluation activities for the course included, three tests, 10 homework assignments, and one group presentation. Twenty students enrolled in the class in January; seven-teem completed the course and received a grade in May.

Decision style inventory

The Decision Style Inventory (DSI) was based upon a stream of research by Alan Rowe and Richard Mason (1987). The DSI uses a 20 question, forced-choice questionnaire. Each question has four answers which the subject rates exclusively as an 8, 4, 2, or 1; each rating can be used only once across the four answers to the question. The answers are in columns that when added up create a rating for the subject across four decision making styles: Analytical, Behavioral, Conceptual, and Directive. Each of these styles has a short anecdotal description that summarizes it. The subjects are able to compare their own results with Rowe and Mason’s results, collected and compiled from over 2000 people, which provides the basis for their book entitled: Managing with Style. Comparing one’s results to the averages, the subject can identify his or her dominant decision style and possibly a backup style. Rowe and Mason’s work goes much deeper as they work to combine and categorize the decision styles. In the end, no single decision style is declared superior to the others, but the DSI as a whole is used as a means of self-awareness for each student. The DSI assessment was completed by the students at the beginning of the class and again at the end. Any changes in decision style ratings could then be evaluated.
Table 4

<table>
<thead>
<tr>
<th>Core Course</th>
<th>Problem Solving &amp; Creativity Appropriation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundations of Information Systems</td>
<td></td>
</tr>
<tr>
<td>Tying the Course to 2010 IS Curriculum</td>
<td></td>
</tr>
<tr>
<td>Data and Information Management</td>
<td></td>
</tr>
<tr>
<td>Enterprise Architecture</td>
<td></td>
</tr>
<tr>
<td>IT Infrastructure</td>
<td></td>
</tr>
<tr>
<td>IS Project Management</td>
<td></td>
</tr>
<tr>
<td>Systems Analysis and Design</td>
<td></td>
</tr>
<tr>
<td>IS Strategy, Management, and Acquisition</td>
<td></td>
</tr>
</tbody>
</table>

Developing a Creativity and Problem Solving Course in Support of the Information Systems Curriculum

Ben Martz & Jim Hughes

CRITICAL REFLECTION

DISCUSSION AND CRITICAL REFLECTION

In the end, we have multiple data points leaning toward a successful class; defined as students learning five or more creativity techniques. The pre and post measures for the CREAM self-assessment and DSI instruments all point toward improvement in the measure of creativity or decision making style between the beginning and the of the semester. The DSI showed a marked trudoff for the students toward the analytical side of the measurement. The CREAM self-assessment tool’s change was also consistent with the students become “more creative.” Interestingly, with a test for those students engaging both pre and post assessments (N=11), a significant change in their score can be observed. This result is further supported as most, (88%), of the students met or exceeded the final exam question targeting this student learning outcome specifically. In summary, the results position the course as a viable course in problem solving and creativity (Martz, Hughes, & Braun, under review). The cru of this current discussion is to position the course in support of a business informatics curriculum.

Remembering one stated advantage of the case study methodology deployed here is that the active participation of the researchers may provide unique opportunities for observation and insights, we end this paper with just such a discussion concerning the applicability of this class as supporting, at the core, the AIS 2010 information systems curriculum.

Tying the Course to 2010 IS Curriculum

While this study concentrates its analysis at the course level, the course is positioned to be a foundation for higher level courses. For example, problem solving concepts can be and, based upon the early literature review, should be applied to upper division courses in a business information systems curriculum. In fact, critical thinking and creativity are listed as recommended “high level capabilities” in the 2010 IS Curriculum Guidelines (Topi, et al., 2010). Table 4 shows examples of how the problem solving and creativity techniques from Table 1 can map to the seven core courses recommended for an Information Systems curriculum.

This study discusses the development and testing of a problem solving and creativity class which is based on the premises around Problem Based Learning (PBL) and active learning. The course design concentrated on introducing students to techniques for problem solving. The goal was to introduce students to the techniques in such a way that ultimately, he or she could list and identify at least five techniques. In total, the results suggest the active learning design accomplished the goal to better engage students to “appropriate” basic problem solving. In the end, 88% of the students satisfied this goal. In addition, there are indicators of long term learning based upon decision style inventories and creativity indices. As an exploratory field study, this research suggests that the model can provide both explicit and implicit learning of problem solving and creativity techniques (Martz et al., under review). Finally, this paper offers a mapping of the course to the 2010 IS Curriculum core showing how the problem solving techniques within the course can support the suggested curriculum.

REFERENCES


Ben Martz & Jim Hughes

Spring 2016 (Volume 12 Issue 1)

Journal of Learning in Higher Education


INTRODUCTION

Higher education places considerable emphasis today on student learning specifically as it pertains to assessment. As a result, a significant number of educators, in the context of both teaching and research, seem transfixed with the desire and perhaps the need to focus attention on appropriate pedagogy. Since much rides on the instructor’s performance in the classroom, this focus is generally justified. As discussed later in the review of relevant literature, there is considerable research on what constitutes quality teaching and the role that technology, including presentation software, plays in its composition. Yet as one might expect, there is little consensus as to either of these focal points. Of significance, however, is that none of the prior research found has directly considered the intersection of the two related themes within the context of an accelerated course, i.e., one that is taught over roughly one-half of a standard (i.e., 16 week) semester, which serves as the motivation for this particular study. As a further twist to this study, the “presentation” software was only made available to students outside of the classroom and not as a tool to present material in class.

Numerous articles found in education literature discuss the advantages and disadvantages of using “presentation” software to deliver critical course content to students. Frequently the perceived value of the use of software such as PowerPoint is dependent upon how it is used, for instance, the extent to which bells and whistles are incorporated into the presentation. Extensive use of color, animation and variety can keep students interested and engaged, which, it is sometimes claimed, results in expanded student learning. However, these same techniques have been criticized for taking away from the significance of the content and resulting in students who become passive learners at best. This article summarizes the results of a study designed to assess the value of using “presentation” software outside of the classroom where the course is offered face-to-face but in an accelerated (i.e., abbreviated time) format. Specifically, results of a survey taken of accounting students completing a required federal individual income course over eight weeks are reported, where instructor-prepared PowerPoint slides were made available to students but not covered in class.

ABSTRACT

Numerous articles found in education literature discuss the advantages and disadvantages of using “presentation” software to deliver critical course content to students. Frequently the perceived value of the use of software such as PowerPoint is dependent upon how it is used, for instance, the extent to which bells and whistles are incorporated into the presentation. Extensive use of color, animation and variety can keep students interested and engaged, which, it is sometimes claimed, results in expanded student learning. However, these same techniques have been criticized for taking away from the significance of the content and resulting in students who become passive learners at best. This article summarizes the results of a study designed to assess the value of using “presentation” software outside of the classroom where the course is offered face-to-face but in an accelerated (i.e., abbreviated time) format. Specifically, results of a survey taken of accounting students completing a required federal individual income course over eight weeks are reported, where instructor-prepared PowerPoint slides were made available to students but not covered in class.
to facilitate internships taken by students, usually for aca-
demic credit and usually with public accounting firms.
It is common at the university to place thirty or more stu-
dents annually with firms within the geographical region
and beyond from early January through mid-March to
help with the busy audit and, to a lesser degree, tax sea-
sons. When students return from their internships, they
will take one or two classes (a job or financial aid pur-
pose) over the second half of the semester; a three credit
hour “block” course will meet six hours a week, double
the weekly coverage of a standard full semester class.
This by itself adds considerably to the burden imposed on stu-
dents to keep current, and if they are enrolled in multiple
block classes which is frequently the case, the workload is
compounded. Students who do not register for an intern-
ship during the semester in question must also take
the block class or classes as no other option for these classes
is usually available; if they are registered for full-semester
courses as well, they often must contend with the reality of
having a majority of the work (term papers or presenta-
tions, for example) in these classes being assigned closer to
the end of the academic term. Thus, regardless of whether
students have internships during the semester or not, there is a workload im-
balance which is typically not well received by all of them,
and raises a concern amongst faculty members that stu-
dent learning is being compromised due to information overload. Student courses and the in-
spectors also tend to suffer, which can later cause related
issues for them when they are considered for salary adjust-
ment, contract renewal, promotion and/or tenure.

PRIOR RESEARCH

While assessment is concerned with student learning, its measurement can be somewhat subjective in nature given what is being assessed, and efforts to be more objective fre-
quently result in rigidity with no added insights/challenges in terms of outcome or useful information. Similarly, what constitutes good teaching is also open to multiple defini-
tions and subject to individual bias. However, teaching
that students believe they learn more when technology is
viewed positively by everyone. Coursey (2003) believes
technology such as PowerPoint has replaced “clear
viewed positively by everyone. Coursey (2003) believes
video that was always accessible to
while the PowerPoint slides were always accessible to
the questions. No points were given for the completion of
was the same as expected; the remaining 14 indi-
cated that the use of technology somewhat
increased his or her learning as a general rule. In addition,
the results of the survey, 25 (54%) of the students had
student (2%) reported that the use of technology somewhat
sponses to these substantive questions are reported below. Howev-
er, it should be noted that as a precursor to discuss-
ning the results of the survey, 25 (54%) of the students had
student (2%) reported that the use of technology somewhat
increased his or her learning as a general rule. In addition,
the results of the survey, 25 (54%) of the students had
student (2%) reported that the use of technology somewhat
increased his or her learning as a general rule. In addition,
the results of the survey, 25 (54%) of the students had
student (2%) reported that the use of technology somewhat
increased his or her learning as a general rule. In addition,
off, including 46% who printed off all the slides, 13% who printed off most of them, and 11% who printed about half of them. Most of the students (26) printed off the slides right before a chapter was covered. Of the 30% who did not print them off, almost all of them (93%) indicated that they looked at all of the slides. To provide additional context, the slides were prepared by the instructor and followed the 13% who printed off all of the slides, and in following the instructor’s organization of the material found in the text as well as the assigned homework problems. Further, typically 12 to 14 slides were created for each of the covered chapters.

Students were then asked how and when they used the slides, with Table One summarizing the results in percentages. Students were instructed to mark all of the specified uses that applied to them. As can be seen, respondents indicated the most common uses of the provided PowerPoint slides came as they prepared for exams, both with respect to studying for a test and as help in preparing their crib sheet. It also appeared that the survey respondents considered the slides useful during class meetings as a way to organize their class notes and in following the instructor’s discussions of the homework problems, as well as to solve homework problems prior to a class session. However, the slides were used less frequently by the students in preparing for covering new material, i.e., prior to or while reading a chapter initially, even though this is when the slides were most frequently accessed for the first time based on the responses received.

As a follow-up, students were then asked how helpful the slides were with respect to their various uses, with Table Two summarizing the results. The percentages shown represent the responses of only those who had previously marked a particular use (as reported in the first table).

Overall, the majority of students who reported a particular use found that the slides were at least somewhat helpful, and often extremely useful. At least 70% of the students acknowledging a specific use found the slides extremely helpful when it came to taking or supplementing their notes, following along in class, reviewing the material after class, studying for the exams and preparing a crib sheet. The value attributed to latter two (helping with tests) are especially noteworthy given the high number of students who used the slides for those purposes as reported in Table One. The slides were less helpful with respect to assisting students with answering homework problems prior to coming to class and in completing the tax return project.

Table Three reports how students perceived the value of the slides in more general terms. Students were asked whether they agreed or disagreed with the following statements, and the extent of their agreement or disagreement.

Overall, students generally perceived that the slides, even though not used during class, made studying for the course and exams more efficient. Likewise, the slides were viewed positively in terms of helping identify the most important concepts. Of significance, most students (97%) considered the slides a beneficial learning tool to at least some extent, and a large percentage (85%) thought they also somewhat contributed to helping them achieve a higher grade. Also of interest although not mentioned in the table, when students were asked whether the instructor should spend more class time reviewing the slides given the nature and pace of the class, the results were as follows: strongly agree, 11%; somewhat agree, 28%; neither agree nor disagree, 37%; somewhat disagree, 22%, and strongly disagree 2%. Thus while almost 40% of the class would have liked the slides to be emphasized more in class, the rest were indifferent or against their increased usage during class time.

Finally, students were asked how helpful the slides were in a block class as compared to a typical full-semester course. Exactly half of the class reported that the slides were "much more helpful" in the accelerated class, while 28% found them to be somewhat more helpful and 22% found them to be equally as helpful. So although the slides were not used in the accelerated class as a presentation tool, most students found them to be more helpful than when they are used in a full-semester class. Perhaps because of this, all 46 students indicated that the instructor should continue to make the slides available to future classes.

Table Two: Helpfulness of Slides (Percentage Responses by Survey Participants)

<table>
<thead>
<tr>
<th>Helpfulness</th>
<th>Extremely</th>
<th>Somewhat</th>
<th>Not</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior to reading a chapter, to gain a general understanding of the material</td>
<td>55.00</td>
<td>35.00</td>
<td>10.00</td>
</tr>
<tr>
<td>While reading a chapter, to help identify the most important parts of the material</td>
<td>50.00</td>
<td>37.50</td>
<td>12.50</td>
</tr>
<tr>
<td>After reading a chapter, to help answer homework questions</td>
<td>44.83</td>
<td>55.17</td>
<td>0.00</td>
</tr>
<tr>
<td>During class, as a way to take/supplement notes</td>
<td>76.66</td>
<td>16.67</td>
<td>6.67</td>
</tr>
<tr>
<td>During class, as a way to follow along with the instructor’s presentation of the material</td>
<td>77.42</td>
<td>16.13</td>
<td>6.45</td>
</tr>
<tr>
<td>After class, as a way to review the material just covered</td>
<td>78.00</td>
<td>20.00</td>
<td>10.00</td>
</tr>
<tr>
<td>Right before test as a way to help study for an exam</td>
<td>72.18</td>
<td>25.58</td>
<td>2.28</td>
</tr>
<tr>
<td>Right before the test to help prepare the crib sheet</td>
<td>76.31</td>
<td>18.42</td>
<td>5.27</td>
</tr>
<tr>
<td>To help complete the tax return project</td>
<td>19.23</td>
<td>61.54</td>
<td>19.23</td>
</tr>
</tbody>
</table>

Table Three: General Value of Slides (Percentage Responses by Survey Participants)

<table>
<thead>
<tr>
<th>Agreement</th>
<th>Agree</th>
<th>Somewhat</th>
<th>Neither</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>The slides made studying for the class more efficient</td>
<td>58.70</td>
<td>30.43</td>
<td>8.70</td>
<td>2.17</td>
</tr>
<tr>
<td>The slides made studying for exams more efficient</td>
<td>67.39</td>
<td>26.89</td>
<td>4.21</td>
<td>0.00</td>
</tr>
<tr>
<td>The slides helped identify what content was the most important in this class</td>
<td>60.87</td>
<td>34.78</td>
<td>4.35</td>
<td>0.00</td>
</tr>
<tr>
<td>Overall the slides were a beneficial learning tool</td>
<td>71.74</td>
<td>26.89</td>
<td>0.00</td>
<td>2.17</td>
</tr>
<tr>
<td>The slides helped me achieve a better course grade</td>
<td>47.48</td>
<td>41.30</td>
<td>13.04</td>
<td>2.17</td>
</tr>
</tbody>
</table>

Conclusion

Prior research has revealed that presentation software such as PowerPoint has both its supporters and opponents. When used effectively, it can make a class more organized and help communicate the relative importance of the content. Yet it can also have a detrimental effect on the students’ participation in their own learning, causing some to stop taking notes or attending class. In this study, the instructor made self-created PowerPoint slides available to students in an accelerated class as a study aid, but did not utilize them in class. It was hoped that the usage of the slides would focus students’ attention on the content the instructor thought was the most important, but this did not distract from their engagement in classroom discussions or provide an excuse not to attend or pay attention. The slides were not used to facilitate lectures, which were seldom used due to the problem-oriented nature of the class, i.e., class time was used to solve homework problems assigned in the syllabus. Of note, eight of the students indicated in the questionnaire (administered after the last class but before the final exam) that they always came to class prepared, while 32 reported that they usually came...
to class prepared; on the other hand, five students indi- cated they seldom came to class prepared, while one re- ported he or she was never prepared before class. Also, one-third (15) of the students (45 of 46) who reported that they took notes during class indicated theirs closely followed the PowerPoint slides, while 20 and 10 students, respectively, indicated that their notes somewhat followed or did not follow the slides. Thus it appears that most of the disadvantages normally associated with using presenta- tion software were minimized by not using the slides in class as a way to present the material. Students still took notes and came to class prepared as a general rule.

The results of the questionnaire as reported above suggest that students used the slides in a variety of ways, including preparing for class, taking notes and following along in class, as well as studying for the exams. In fact, review- ing the slides was generally found to be helpful with respect to all of these uses, their greatest value related to studying for the exam and preparing exam crib sheets; they were also found to be of less help in answering homework problems and completing the tax return project. This wasn’t surpris- ing to the instructor, as the slides included a more con- ceptual discussion of the topics covered and did not offer hints on how to solve particular problems or on how to navigate tax forms.

Students also found the slides to be a beneficial learn- ing tool even though they were not utilized in class, as well as studying for the exams. In fact, review- ing the slides was generally found to be helpful with respect to all of these uses, their greatest value related to studying for the exam and preparing exam crib sheets; they were also found to be of less help in answering homework problems and completing the tax return project. This wasn’t surpris- ing to the instructor, as the slides included a more con- ceptual discussion of the topics covered and did not offer hints on how to solve particular problems or on how to navigate tax forms.

The results of this study provide opportunities for future research. Given differences in how students believe technol- ogy generally impacts their learning, further analysis will be undertaken to see how these beliefs impacted their usage of the slides in this particular situation. In addition, the authors are exploring how demographic differences among the respondents have impacted their usage and perceptions of the value of slides, such as gender and grade point average.

REFERENCES


This page intentionally blank.
THE RELATIONSHIP BETWEEN
GROWTH SCORES AND THE OVERALL OBSERVATION RATINGS FOR
TEACHERS IN A PUBLIC SCHOOL SYSTEM IN TENNESSEE

Joshua Davis
Sullivan County (Tennessee) School System
Blountville, Tennessee

James H. Lampley
East Tennessee State University
Educational Leadership and Policy Analysis
Johnson City, Tennessee

Virginia Foley
East Tennessee State University
Educational Leadership and Policy Analysis
Johnson City, Tennessee

ABSTRACT
The purpose of this study was to investigate the relationship between the TVAAS growth score given by the Tennessee Department of Education and the overall Tennessee Educator Assessment Model (TEAM) observation rating for teachers in grades 3 through 8. The participating county public school system for this study is located in Northeast Tennessee. Participants were teachers in the school system teaching Math, English/Language Arts, Science, and Social Studies in grades 3 through 8 in 10 elementary schools, 6 middle schools, and 2 K-8 schools. Specifically, this research examined the relationship between the TEAM observation scores and overall TVAAS growth score given to the teacher from the Tennessee Department of Education based upon yearly-standardized test scores. Research reinforced mixed views about the validity and purpose of teacher evaluation systems and the use of Tennessee Value-Added Assessment System. Five research questions guided this study and quantitative data were analyzed using a Pearson correlation, one-way MANOVAs and a one-way ANOVA. Results indicated a moderate positive relationship between a teacher's TEAM observation score and the TVAAS growth score given by the Tennessee Department of Education.

INTRODUCTION
The Tenth Amendment to the United States Constitution states: "The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people." (Tenth Amendment, 1791, para. 1). Because education is not mentioned in the Constitution, it is one of those powers reserved to the states. However the Federal Government has increasingly become involved in public education. The Elementary & Secondary Education Act of 1965 (ESEA) was a Great Society program enacted by the U.S. Congress. The ESEA allocated federal funds for primary and secondary school education. This Act also provided a vehicle to hold schools and states accountable for student achievement (Elementary and Secondary Education Act, 1965).

Public Law 107-110, also known as the No Child Left Behind Act of 2001 (NCLB), was a revision and reauthorization of the ESEA (Public Law 107-110, 2002). The stated purpose of NCLB was a fair, equal, and significant opportunity to obtain a high-quality education. The NCLB law called for children to obtain proficiency on challenging state achievement measures.

The American Reinvestment and Recovery Act (ARRA) of 2009 was enacted by the U.S. Congress to stimulate the economy, support job creation, and invest in critical sectors including education. The ARRA created a platform for educational reform by calling for adoption of standards and assessments, measurement of growth and success, measures to improve teacher quality, and improvement of low-achieving schools (U.S. Department of Education, 2009). The ARRA provided 4.35 billion dollars in a Federal grant program known as Race to the Top. Tennessee was announced as one of the first states to receive Race to the Top grant funds. Tennessee’s application, titled First to the Top, included reforms to cur-
The Relationship between Growth Scores and Overall Observation Ratings for Teachers in a Public School System in Tennessee

Joshua Davis, James H. Lampley, & Virginia Foley

The Relationship between Growth Scores and Overall Observation Ratings for Teachers in a Public School System in Tennessee

Spring 2016 (Volume 12 Issue 1)

The Tennessee Department of Education now links effect data derived by state assessments for achievement with state's research and development for grade levels of rubric (Tennessee Department of Education, 2012). As a result of the SCORE report, there were several changes made in the second year of the TEAM evaluation system in Tennessee. Additionally, there was increased district flexibility through the approval of more than 40 plans to further customize the overall evaluation system to fit the needs of individual districts (Tennessee Department of Education, 2013).

Tennessee Value-Added Assessment System

The Tennessee Value-Added Assessment System (TVAS) was created in 1992 as a component of the Education Improvement Act (Tennessee Department of Education, 2014). TVAS is based on SASS’s Education Value-Added Assessment System. TVAS is a statistical method that is designed to measure the impact schools and teachers have on their students’ academic progress. The TVAS method uses previous test data to plot a growth pattern for every student in grades three through eight in Tennessee. Growth is measured by how much gain or progress an individual student or group of students make over time. Under Tennessee’s teacher evaluation legislation, value-added scores count for a portion of teachers’ overall evaluation. Growth is measured by the percentage of students who have remained in the same percentile range of the national normative distribution. The Tennessee Value-Added Assessment System (TVAS) includes an additional assessment of student achievement that meets the state’s standards. The relationship between students’ growth scores and TVAS scores is used to determine statistical significance at the 0.05 level of confidence. The relationship between students’ growth scores and TVAS scores is used to determine statistical significance at the 0.05 level of confidence.

METHOD

This nonexperimental, quantitative study was conducted using a secondary data analysis design. Inferential statistical analyses (Pearson correlation coefficient, ANOVA, MANOVA) were used to test the relationship between teachers’ TVAAS growth scores and TVAAS observation scores given by the Tennessee Department of Education for teachers in grades 3 through 8 in the participating school system.

LIMITATIONS AND DELIMITATIONS

It was assumed that the data that were collected from the state’s databases were valid and reliable. It was also assumed that the methodology adequately addressed the research questions. In addition, it was assumed that the statistical tests were appropriate and possessed the necessary power to detect, if present, differences in the variables. The study was also delimited to the teachers who teach in grades three through eight in the participating school system in Tennessee. Teachers who met all other qualifications but did not have both a TVAAS growth score and a TEAM observation score were excluded from the study. This study was further delimited by the theoretical framework that was selected for the research. The results may not be generalizable to other school systems or other states.

FINDINGS

Research Question 1: Is there a significant relationship between overall TEAM observation scores and TVAAS growth scores given by the Tennessee Department of Education for teachers in grades 3 through 8 in the participating school system?

A Pearson correlation coefficient was computed to test the relationship between teachers’ TVAAS growth scores and TVAAS observation scores. The results of the correlational analysis revealed a moderate positive relationship between TEAM observation scores (M = 6.95, SD = 4.47) and TVAAS growth scores (M = 3.41, SD = 1.59) and a statistically significant correlation (r(238) = .28, p < .010). In general, the results suggest that teachers with high TVAAS growth scores tended to have high TEAM observation scores. Figure 1 displays the bivariate scatterplot.

Research Question 2: Is there a significant difference in teachers’ TVAAS growth scores and teachers’ TEAM observation scores given by the Tennessee Department of Education for teachers in grades 3 through 8 in the participating school system?

A one-way multivariate analysis of variance (MANOVA) was conducted to determine the relationship of the gen-
The Relationship between Growth Scores and Overall Observation Ratings for Teachers in a Public School System in Tennessee

Joshua Davis, James H. Lampley, & Virginia Foley

The Relationship between Growth Scores and Overall Observation Ratings for Teachers in a Public School System in Tennessee

The dependent variables and the gender of the teacher.

Table 1 contains the means and standard deviations on TVAAS growth scores and TEAM observation scores. There was no significant difference in the means between Title I schools and Non-Title I schools, Wilks’ Λ = 0.98, F(2, 237) = 7.56, p = .001. The multivariate η2 based on Wilks’ Λ was .06. Table 2 contains the means and standard deviations on the dependent variables of license type.

Research Question 3: Is there a significant difference in teachers’ TVAAS growth scores and teachers’ TEAM observation scores by socioeconomic status of the school in grades 3 through 8 in the participating school system?

Research Question 4: Is there a significant difference in teachers’ TVAAS growth scores and teachers’ TEAM observation scores by socioeconomic status of the school in grades 3 through 8 in the participating school system?

A one-way multivariate analysis of variance (MANOVA) was conducted to determine the relationship of license types (apprentice or professional) to the dependent variables, TVAAS growth scores and TEAM observation scores. A significant difference was found for license type and the dependent variables, Wilks’ Λ = .94, F(2, 237) = 7.56, p = .001. The multivariate η2 based on Wilks’ Λ was .06. Table 2 contains the means and standard deviations on the dependent variables of license type.

An analysis of variance (ANOVA) was conducted on each of the dependent variables (observation and growth) as follow-up tests to the MANOVA. Using the Bonferroni method, each ANOVA was tested at the .025 level (.05/2). The ANOVA for license type and observation scores was found to be statistically significant, F(1, 202) = 9.72, p = .002, η2 = .05, and the ANOVA for license type and growth scores was also statistically significant, F(1, 34) = 9.35, p = .003, η2 = .23. Teachers who hold professional licenses tend to have higher TVAAS growth scores and higher TEAM observation scores than teachers holding apprentice licenses.

Research Question 5: Is there a significant difference in teachers’ TEAM observation scores among the 4 levels of experience of the evaluating administrator (0-1 year experience, 2 to 4 years experience, 5 to 10 years experience, 11 or more years experience)?

A one-way analysis of variance (ANOVA) was conducted to evaluate the relationship between the evaluating administrator’s experience and the overall TEAM observation rating. The factor variable, years of experience, included four levels (0-1 year of experience, 2 to 4 years of experience, 5 to 10 years of experience, 11 or more years of experience). The dependent variable was the overall TEAM observation rating. The ANOVA for experience of administrator in observation scores was significant, F(1, 238) = 11.96, p < .001. The strength of the relationship between the experience of the administrator and the observation rating, as assessed by h2, was large (.13). Because the overall F test was significant, post hoc multiple comparisons were conducted to evaluate pairwise difference among the means of the four groups. A Dunnett’s C procedure was selected for the multiple comparisons because equal variances were not assumed (p = .086). There was a significant difference in the means between administrators with 11 or more years of experience and all three of the other groups. However, there was not a significant difference between the means of any of the other pairs. It appears that administrators with more experience award higher observation scores. The 95% confidence intervals for the pairwise differences, as well as, the means and standard deviations for the four groups are reported in Table 4.

A one-way multivariate analysis of variance (MANOVA) was conducted to determine the relationship of the school’s socioeconomic status (Title I or Non-Title I) to the two dependent variables, TVAAS growth scores and TEAM observation scores. There was no significant difference in TVAAS growth scores or TEAM observation scores between Title I schools and Non-Title I schools, Wilks’ Λ = .99, F(2, 476) = 58, p = .557. The multivariate η2 based on Wilks’ Λ was .01. Teachers in Title I and non-Title I schools tend to have similar TVAAS growth scores and TEAM observations scores. Table 3 contains the means and standard deviations on the dependent variables of socioeconomic status of the school.

Important findings for this study included a moderate positive correlation between teachers’ TEAM observation scores and their TVAAS growth scores, no significant difference on TEAM observation scores or TVAAS growth scores by gender of the teacher, a significant differ-

Table 3

<table>
<thead>
<tr>
<th>Socioeconomic Status</th>
<th>TEAM Observation</th>
<th>TVAAS Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title I</td>
<td>186</td>
<td>4.05</td>
</tr>
<tr>
<td>Non-Title I</td>
<td>54</td>
<td>3.93</td>
</tr>
</tbody>
</table>

Research Question 1: Is there a significant difference in teachers’ TEAM observation scores among the four groups based on the gender of the teacher (male or female)?

There was no significant difference in TVAAS growth scores or TEAM observation scores between male teachers and female teachers, Wilks’ Λ = .98, F(2, 476) = 2.48, p = .09. The multivariate η2 based on Wilks’ Λ was .02. Male and female teachers tended to have similar TVAAS growth scores and TEAM observation scores. Table 1 contains the means and standard deviations on the dependent variables and the gender of the teacher.

Research Question 2: Is there a significant difference in teachers’ TVAAS growth scores and teachers’ TEAM observation scores by license type (apprentice or professional) of the teacher in the two dependent variables (observation and growth) as follow-up tests to the MANOVA. Using the Bonferroni method, each ANOVA was tested at the .025 level (.05/2). The ANOVA for license type and observation scores was found to be statistically significant, F(1, 202) = 9.72, p = .002, η2 = .05, and the ANOVA for license type and growth scores was also statistically significant, F(1, 34) = 9.35, p = .003, η2 = .23. Teachers who hold professional licenses tend to have higher TVAAS growth scores and higher TEAM observation scores than teachers holding apprentice licenses.

Figure 1

Scatterplot for TEAM observation scores and TVAAS growth scores

TABLE 1

<table>
<thead>
<tr>
<th></th>
<th>TEAM Observation</th>
<th>TVAAS Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>N M SD</td>
<td>M SD</td>
</tr>
<tr>
<td>Male</td>
<td>42 .39 .07 3.35 23</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>198 .48 .03 3.42 10</td>
<td></td>
</tr>
</tbody>
</table>

TABLE 2

<table>
<thead>
<tr>
<th>Type of License</th>
<th>TEAM Observation</th>
<th>TVAAS Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional</td>
<td>204 4.09 .46 3.53 1.43</td>
<td></td>
</tr>
<tr>
<td>Apprentice</td>
<td>56 .83 .51 2.72 1.67</td>
<td></td>
</tr>
</tbody>
</table>

TABLE 3

<table>
<thead>
<tr>
<th>Socioeconomic Status</th>
<th>TEAM Observation</th>
<th>TVAAS Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title I</td>
<td>186</td>
<td>4.05</td>
</tr>
<tr>
<td>Non-Title I</td>
<td>54</td>
<td>3.93</td>
</tr>
</tbody>
</table>

SUMMARY

Important findings for this study included a moderate positive correlation between teachers’ TEAM observation scores and their TVAAS growth scores, no significant difference on TEAM observation scores or TVAAS growth scores by gender of the teacher, a significant differ-

Journal of Learning in Higher Education

Spring 2016 (Volume 12 Issue 1)
The Relationship between Growth Scores and Overall Observation Ratings for Teachers in a Public School System in Tennessee

Joshua Davis, James H. Lampley, & Virginia Foley

The most important question may be whether or not these state generated correlation scores will produce an artificial alignment of TEAM observation scores and TVAAS growth scores by influencing future TEAM observation scores.

REFERENCES


51
In earlier times businesses had a close physical relationship with their customers and had much first-hand knowledge about their customers such as whom they were, where they lived, what were their needs, and so on. However, as businesses became larger and more global in scope, it became harder for them to understand who their customers are, how to best serve them, and how to maximize their own profits.

To make such decisions in today’s fast-paced global marketplace, companies make extensive use of something called “business intelligence”. This approach relies on large data warehouses and complex computer algorithms to sift through endless amounts of data. Business technologists have many names for this revolutionary technology; “business intelligence” (BI), “data analytics,” and “data mining” are among the most common.

The Economist calls it “a golden vein”, and many business experts now say it is the new science of winning. Business and technologists have many names for this new science, “business intelligence” (BI), “data analytics,” and “data mining” are among the most common.

The job market for people skilled in this area is growing rapidly. ComputerWorld’s Survey of its 100 IT leaders ranked it as their top file priority for 2014, and a Gartner survey of 1,400 chief information officers suggests that business intelligence is the number one technology priority for IT organizations.

For these reasons, colleges are rushing to develop curriculums, courses, and teaching methods to prepare students for this field. Teaching business students this new science is challenging for a number of reasons including the fact that it uses a variety of disciplines, many traditionally outside of the business school including sophisticated computer algorithms. Thus “engaging” business students with lessons about data mining can be challenging. In this paper, a method of such teaching engagement is discussed and illustrated.

The Economist says it’s “a golden vein”, and many business experts now call it “the new science of winning”. It’s been adopted by nearly every Fortune 500 company. Even many professional sports franchises are using this new technology. A Gartner survey of 1,400 chief information officers suggests that business intelligence is the number one technology priority for IT organizations”.

Most companies are not short on data. Large businesses store hundreds of terabytes just from their daily transactions. This tells them who is buying what, and also where and when. But today business also needs to know why, or why not.

Traditionally this was done with classical business research such as surveys, focus groups, etc. But today it also comes from web and social media such as tweets, videos, likes, and “clickstream data”. This is typically called “Big

Engaging Business Students with Data Mining

Dan Brandon
Professor, MIS Department
Christian Brothers University
Memphis, TN

ABSTRACT
The Economist calls it “a golden vein”, and many business experts now say it is the new science of winning. Business and technologists have many names for this new science, “business intelligence” (BI), “data analytics,” and “data mining” are among the most common.

The job market for people skilled in this area is growing rapidly. ComputerWorld’s Survey of its 100 IT leaders ranked it as their top file priority for 2014, and a Gartner survey of 1,400 chief information officers suggests that business intelligence is the number one technology priority for IT organizations.

For these reasons, colleges are rushing to develop curriculums, courses, and teaching methods to prepare students for this field. Teaching business students this new science is challenging for a number of reasons including the fact that it uses a variety of disciplines, many traditionally outside of the business school including sophisticated computer algorithms. Thus “engaging” business students with lessons about data mining can be challenging. In this paper, a method of such teaching engagement is discussed and illustrated.
Data”. The average large company now has more data stored than the Library of Congress.

Job growth in this area is very strong as illustrated in the figure below. InformationWeek’s 2012 State of IT Staffing Survey reveals that 48% of those employers who cite big data and analytics as a top hiring priority say they’ll increase staffing in these areas by 11% or more during the next two years. At the same time, 53% of these companies say it will be hard to find big-data-savvy analytics experts. A Gartner survey of 1,400 chief information officers suggests that business intelligence is the number one technological priority for IT organizations.

ComputerWorld’s Survey of its 100 IT leaders ranked their top five priorities for 2014:

- Business intelligence
- Mobility (tablets, apps, etc)
- Application development
- Cloud computing
- Security

**BUSINESS INTELLIGENCE AND DATA MINING**

Wikipedia defines business intelligence (BI) as a set of theories, methodologies, architectures, and technologies that transform raw data into meaningful and useful information for business purposes. Business intelligence, particularly via data mining, reverses the traditional “scientific method” which has these sequential steps:

- Formulate a hypothesis
- Gather data.
- Experiments, Surveys, Observations, etc.
- An inferential statistic to see if the data supports the hypothesis
- Association or affinity analysis – looking for statistical rules among data items
- Nearest-neighbor and clustering method – looking for concentrations of data in n-dimensional space
- Text mining and context analysis – deriving quality information and patterns from text

**AFFINITY ANALYSIS**

Perhaps most used and most successful of the data mining applications is affinity analysis which uses a specialized set of algorithms that sort through large data sets and express statistical rules among items. A typical usage is for analyzing purchase patterns of customers via transaction data which contain a huge wealth of information that can be used for a variety of purposes as:

- Marketing
- Up selling
- Cross selling
- Recommendations
- Inventory & logistics
- Product placement
- Store management

Affinity analysis is also called “market basket analysis” since it essentially determines what products people purchase together. Stores can use this information to place these products in the same area (particularly preferred brands), direct marketers can use this information to determine which new products to offer to their current customers, and inventory policies can be improved if reorder points reflect the demand for the complementary product.

Affinity analysis finds rules which are derived in the form “left-hand side implies right-hand side”. An example is:

Yellow Peppers IMPLIES Red Peppers, Bananas

The rules are unidirectional, and the following is an “obvious” rule:

Vodka IMPLIES Vodka

But the reverse is not true:

Vodka IMPLIES Caviar

The key measures of mining predictive ability of a rule are:

- Support (prevalence) refers to the percentage of baskets where both left and right side products were present
- Confidence measures what percentage of baskets that contained the left-hand product also contained the right
- Lift measures how much more frequently the left-hand item is found with the right than pure chance (the product of their individual probabilities of occurrence)

For affinity analysis, we first need a list of transactions of what was purchased—this is readily available with modern electronic cash registers. A transaction is the purchase of one or more items by a customer at one point in time and space—a “shopping cart” or “market basket”.

Next, we choose a list of products to analyze (perhaps all our products), and tabulate in a table how many times each was purchased with the others. The diagonals of the table shows how often a product is purchased in any combination, and the off-diagonals show which combinations were bought.

Consider the following simple example of five transactions at a convenience store:

- Transaction 1: Frozen pizza, cola, milk
- Transaction 2: Milk, potato chips
- Transaction 3: Cola, frozen pizza
- Transaction 4: Milk, pretzels
- Transaction 5: Cola, pretzels

Below is the resulting “affinity table”:

<table>
<thead>
<tr>
<th>Product Bought</th>
<th>Also Bought:</th>
<th>Product Bought</th>
<th>Also Bought:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pizza</td>
<td>Milk</td>
<td>Chips</td>
<td>Pretzels</td>
</tr>
<tr>
<td>Pizza</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Milk</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Chips</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Pretzels</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

From the affinity table we want to find association rules which suggest a relationship between the two transactions. The rules are written as for single items A and B:

**A IMPLIES B or (A → B)**

Support is calculated as the % of transactions (baskets) where an association rule applies, that is where we see both item A and B in the same basket. For example, if 500 baskets contain both A and B out of a total of 1000 baskets, then the support is 50%. A implies B and B implies A both have the same support. The support measure for Cola IMPLIES Pizza is 40% (2/5); of the 5 transactions 2 have both cola and pizza. Note support does not consider direction (Pizza IMPLIES Cola is also 40%).

Confidence measures the predictive accuracy of a rule, and it is defined as the probability that item B is in the basket if item A is in the basket (“conditional probability”)

\[ P(B|A) = \frac{P(AB)}{P(A)} \]

It is calculated as the support (A & B)/P(A) where support (A) is the % of baskets containing A. For example, if 500 baskets contain both A and B out of a total of 1000 baskets, then the support of A & B is 50%. If A is in 75% of baskets, the confidence is 50/75 or 67%. Milk IMPLIES Chips has a confidence of 33%, since the support of “Milk plus Chips” is 20% (1/5) and Milk is in 60% of baskets (3/5). Thus 20%/60% is 33. Confidence is unidirectional.

Lift is calculated as the ratio of support to a product to the individual probabilities of both sides:

\[ \frac{P(AB)}{P(A) \cdot P(B)} \]

For example, if 500 baskets contain both A and B out of a total of 1000 baskets, then the support of A & B is 50%. If A is in 75% of baskets and B is in 20% of the baskets, then the lift is 0.50/0.75*0.20 = 3.33. Computing Lift: TABLE

| Lift | TABLE
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lift</td>
<td>support of A to support of B</td>
</tr>
<tr>
<td>Lift</td>
<td>support of A to support of B</td>
</tr>
<tr>
<td>Lift</td>
<td>support of A to support of B</td>
</tr>
<tr>
<td>Lift</td>
<td>support of A to support of B</td>
</tr>
<tr>
<td>Lift</td>
<td>support of A to support of B</td>
</tr>
</tbody>
</table>

The rules can be formulated for each pair of products, and the three measures calculated. Only the rules that have significant measures are going to be accepted—this is the mining portion of the process. Some rules are going to be trivial (“hot dogs and buns sell together”), and some rules may be far from obvious.

**Engaging Students via Interactive Web Teaching Tools**

Due to the business need for data mining and the resulting strong job market, colleges are rushing to develop curriculums, courses, and teaching methods to prepare students for this field. It is a field that requires both understanding of the business need and application of data mining, but also the understanding of the technology. Thus teaching business students this new science is challenging for a number of reasons including the fact that it uses a variety of disciplines, many traditionally outside of the business school including database design, programming, and sophisticated computer algorithms.

Our teaching approach is to first describe the data analytic methods and its business purpose. Next the student is provided with a basic interactive and intuitive tool that “engages” him. The tool is programmed in HTML5 and JavaScript. The engagement tool for affinity analysis al-
lows the student to interactively fill shopping baskets with available items. The first screen shot below shows the starting screen where the student can manually place items into the baskets, or hit the “auto-fill” button to fill the carts.

Place item 2 in basket 1, when item 2 is already in that basket produces the error shown in the screen below.

Similarly, exceeding the capacity of a basket gives the error shown in the screen shot below.

As well as manually selecting baskets and items (with the mouse), there is an “auto-fill” option to fill the baskets with items matching the “example case” previously described. The screen shot shows the results of hitting the “auto-fill” button.

The following window opens after the student has hit the calculate button. The windows shows the shopping cart contents (in words) and the calculated associative array.

One effective way to use the tool in the classroom is to ask several students to place several items in their basket based upon what they commonly buy at a convenience store. After one has those answers from several students, then the tool is used to perform and display the results. One often gets interesting and unexpected results.

**CONCLUSION**

This paper has described a general approach that was developed to provide intuitive and interactive learning of data analytics core principles. This has proven very useful in practice, particularly for the student’s understanding of the application, and being able to engage the student with the topic.

**REFERENCES**


Gartner Reports. "Business Intelligence/Analytics Is Top Area for CFO Technology Investment Through 2014", May 2013


Information Week, Research: Big Data and Analytics Staffing Survey, October 2012


The Economist, February 27, 2012. "Data, Data Everywhere"
This page intentionally blank.
MOVIES AND FILM IN HIGHER EDUCATION

Movies and film clips have been widely used as a teaching tool in college classes for decades (Champoux 1999) and are considered a valuable pedagogical tool. Viewing movies or film clips have been linked to increasing students' interest in the topic, integration of course material, and improving students' perceptions of the course experience (Badura 2002). A shared film or video clip can improve the substance of students' learning (Brinkley 1999). Générøux and Thompson (2008) found that utilizing movies in college classes increased opportunities for student reflection and involvement.

While movies are an effective tool for enhancing student learning, there are challenges and barriers in using the tool. Many faculty choose not to use this medium due to logistical issues of ensuring copies of the movie are available for the students; additionally there may be problems associated with obtaining copyright clearances (Clemens & Curt 2010). Further, selecting the appropriate movies or film clips, and deciding exactly how to use them, can be daunting. According to Clemens and Curt (2010), it is im-

THINKING OUTSIDE THE BOX OFFICE:
USING MOVIES TO BUILD SHARED EXPERIENCES AND STUDENT ENGAGEMENT IN ONLINE OR HYBRID LEARNING

William Kresse, M.S., J.D.
Assistant Professor
College of Business and Public Administration,
Governors State University
University Park, IL

Dr. Kathleen Hanold Watland
Associate Dean, Chair of the Management Department, and Associate Professor
Graham School of Management
Saint Xavier University
Chicago, IL

ABSTRACT

Movies and films are widely recognized as valuable pedagogical tools. Motion pictures provide concrete and illustrative examples of important concepts and can improve students' understanding of course material as well as increase their satisfaction with courses.

Online learning is becoming an increasing dominant facet of higher education. Online learning is preferred by many students for various reasons, many related to the flexibility and format of the course work; students can engage in learning when it is convenient for them.

While the flexibility of time and format is a major appeal of online learning, it also serves as a major impediment. Student retention is a significant challenge in the online learning environment. Research shows that students in online courses are more likely to feel a sense of “disconnectedness” and miss having a common shared experience with other students. As a result, students in online courses are more likely to withdraw from the course because they miss the opportunities for shared experiences.

This paper explores the use of movies in online and hybrid business courses for the purpose of providing a shared experience around which students can discuss course content. This paper describes the process for creating a shared student experience and creating the related discussions among students centering on particular concepts illustrated in the selected films. The students view the particular movies, and then, with either a lens of management and leadership strategies, or of business ethics concepts, discuss specific questions within their team, the whole class, and then again with their team. This paper discusses the value of that shared movie experience and discusses the need for additional pedagogical strategies to establish and promote online opportunities for student interactions.

MOVIES AND FILM IN HIGHER EDUCATION

Movies and film clips have been widely used as a teaching tool in college classes for decades (Champoux 1999) and are considered a valuable pedagogical tool. Viewing movies or film clips have been linked to increasing students' interest in the topic, integration of course material, and improving students' perceptions of the course experience (Badura 2002). A shared film or video clip can improve the substance of students' learning (Brinkley 1999). Générøux and Thompson (2008) found that utilizing movies in college classes increased opportunities for student reflection and involvement.

While movies are an effective tool for enhancing student learning, there are challenges and barriers in using the tool. Many faculty choose not to use this medium due to logistical issues of ensuring copies of the movie are available for the students; additionally there may be problems associated with obtaining copyright clearances (Clemens & Curt 2010). Further, selecting the appropriate movies or film clips, and deciding exactly how to use them, can be daunting. According to Clemens and Curt (2010), it is im-
perative to identify movies that will capture the students’ attention and resonate with them. At the same time, the movie must clearly support the specific learning objectives of the course. However, by using prompts, questions or a survey to focus the students on specific behaviors or outcomes, or by requiring the students to evaluate or reflect on the situation within the movie, the use of cinema is likely to have a positive impact on the learning objectives (McKeachie & Svinicki 2006).

Holbrook (2007) shared that there are many articles and books to assist faculty in identifying movies or film clips that may be suitable for their particular course content. While movies are widely available across the disciplines, it is especially true for leadership and management content (Holbrook 2009) and for business ethics content (Kester, Cooper, Dean, Peter & Goldby 2009), where the contextual application of film intertwines with the learning objectives. Barber found that student learning can be enhanced in the online environment without special and specific considerations to promote student engagement while also advancing pedagogical practices that would provide shared experiences to promote student engagement (Barber 2013). It is possible for faculty to be strategic in selecting any movies for use in courses. When identifying supplemental research content for their courses, Barber found that faculty are frequently drawn to information that confirms current beliefs and understandings. This may be because faculty are interested in information that may provoke debate. However, information that may be considered more of a positive example or illustration, or information that may provide clarity, elicit inspiration or be considered moving to the students, may be equally, if not more, valuable (Barber 2013). Barber (2013) further argued that students prefer concrete and illustrative examples to hypothetical situations to learn more about a concept. Students seek balanced information that both supports and challenges the assumptions they have formed. Barber further found that student learning can be enhanced in the online environment, without special and specific considerations to promote student engagement (Barber 2013). Barber (2013) argued for the importance of strategically designing and planning leadership and management practices in selected movies. In an online environment, it is especially important for students to have visual models of leadership behaviors (Boston & Ice 2011).

INCREASING ONLINE OFFERINGS AND ENSURING STUDENT ENGAGEMENT

Online learning is experiencing significant growth, and the number of students selecting one or more classes continues to increase. According to the Integrated Post-secondary Educational Data System (IPEDS), more than 70% of all degree-granting institutions offer online or hybrid learning opportunities (Alexander & Seaman 2014). Although there is a surge of interest in enrolling in online courses, student retention is a challenge in the online environment. Without special and specific considerations and experiences, students are much more likely to withdraw from online courses than from courses meeting in person (Boston & Ice 2011). According to Zydney, de Novo-Muir, and a recent research suggests that students frequently withdraw from online learning because of feelings related to “disconnectedness” and a lack of shared experiences and interactions with the other learners. Without shared experiences and purposeful interactions, students are less likely to experience cohesion within their groups (Boston & Ice 2011).

In an online environment, it is especially important for students to have visual models of leadership behaviors (Boston & Ice 2011). Within the first week of the course, students introduce themselves in a Discussion area of the online course environment and respond to a few short questions about their hopes and goals for the course. Some students may be aspiring managers, while others may be aspiring managers. Most of the students are hoping to improve their managerial and leadership skills. Within this course, one of the pedagogical strategies involves identifying and discussing key leadership behaviors (Boston & Ice 2011).

The purpose of the Management Theory and Application course is to explore the effective management practices and leadership skills. The students in the Management Theory and Application course have varying degrees of management experience. Some students are current managers, while others may be aspiring managers. Most of the students are hoping to improve their managerial and leadership skills. Within this course, one of the pedagogical strategies involves identifying and discussing key leadership behaviors (Boston & Ice 2011).

The purpose of the Management Theory and Application course is to explore the effective management practices and leadership skills. The students in the Management Theory and Application course have varying degrees of management experience. Some students are current managers, while others may be aspiring managers. Most of the students are hoping to improve their managerial and leadership skills. Within this course, one of the pedagogical strategies involves identifying and discussing key leadership behaviors (Boston & Ice 2011).

ONLINE LEARNING AND SHARED LEARNING EXPERIENCES

The purpose of the Management Theory and Application course is to explore the effective management practices and leadership skills. The students in the Management Theory and Application course have varying degrees of management experience. Some students are current managers, while others may be aspiring managers. Most of the students are hoping to improve their managerial and leadership skills. Within this course, one of the pedagogical strategies involves identifying and discussing key leadership behaviors (Boston & Ice 2011).

The purpose of the Management Theory and Application course is to explore the effective management practices and leadership skills. The students in the Management Theory and Application course have varying degrees of management experience. Some students are current managers, while others may be aspiring managers. Most of the students are hoping to improve their managerial and leadership skills. Within this course, one of the pedagogical strategies involves identifying and discussing key leadership behaviors (Boston & Ice 2011).

ONLINE LEARNING AND SHARED LEARNING EXPERIENCES

The purpose of the Management Theory and Application course is to explore the effective management practices and leadership skills. The students in the Management Theory and Application course have varying degrees of management experience. Some students are current managers, while others may be aspiring managers. Most of the students are hoping to improve their managerial and leadership skills. Within this course, one of the pedagogical strategies involves identifying and discussing key leadership behaviors (Boston & Ice 2011).

The purpose of the Management Theory and Application course is to explore the effective management practices and leadership skills. The students in the Management Theory and Application course have varying degrees of management experience. Some students are current managers, while others may be aspiring managers. Most of the students are hoping to improve their managerial and leadership skills. Within this course, one of the pedagogical strategies involves identifying and discussing key leadership behaviors (Boston & Ice 2011).

The purpose of the Management Theory and Application course is to explore the effective management practices and leadership skills. The students in the Management Theory and Application course have varying degrees of management experience. Some students are current managers, while others may be aspiring managers. Most of the students are hoping to improve their managerial and leadership skills. Within this course, one of the pedagogical strategies involves identifying and discussing key leadership behaviors (Boston & Ice 2011).

The purpose of the Management Theory and Application course is to explore the effective management practices and leadership skills. The students in the Management Theory and Application course have varying degrees of management experience. Some students are current managers, while others may be aspiring managers. Most of the students are hoping to improve their managerial and leadership skills. Within this course, one of the pedagogical strategies involves identifying and discussing key leadership behaviors (Boston & Ice 2011).

The purpose of the Management Theory and Application course is to explore the effective management practices and leadership skills. The students in the Management Theory and Application course have varying degrees of management experience. Some students are current managers, while others may be aspiring managers. Most of the students are hoping to improve their managerial and leadership skills. Within this course, one of the pedagogical strategies involves identifying and discussing key leadership behaviors (Boston & Ice 2011).

The purpose of the Management Theory and Application course is to explore the effective management practices and leadership skills. The students in the Management Theory and Application course have varying degrees of management experience. Some students are current managers, while others may be aspiring managers. Most of the students are hoping to improve their managerial and leadership skills. Within this course, one of the pedagogical strategies involves identifying and discussing key leadership behaviors (Boston & Ice 2011).

The purpose of the Management Theory and Application course is to explore the effective management practices and leadership skills. The students in the Management Theory and Application course have varying degrees of management experience. Some students are current managers, while others may be aspiring managers. Most of the students are hoping to improve their managerial and leadership skills. Within this course, one of the pedagogical strategies involves identifying and discussing key leadership behaviors (Boston & Ice 2011).

The purpose of the Management Theory and Application course is to explore the effective management practices and leadership skills. The students in the Management Theory and Application course have varying degrees of management experience. Some students are current managers, while others may be aspiring managers. Most of the students are hoping to improve their managerial and leadership skills. Within this course, one of the pedagogical strategies involves identifying and discussing key leadership behaviors (Boston & Ice 2011).
class. Also in line with the Management Theory and Application course, students are supplied with guidelines for watching the films.

The students are instructed to watch three movies:

**The Fountainhead (1949)**: Directed by King Vidor and starring Gary Cooper and Patricia Neal, it is based on the novel of the same name by Ayn Rand.

**Wall Street (1987)**: Directed by Oliver Stone and starring Charlie Sheen and Michael Douglas who won a Best Actor Oscar for his role as Gordon Gekko.

**Other People’s Money (1991)**: Directed by Norman Jewison and starring Danny DeVito and Gregory Peck, it is based on the play of the same name by Jerry Sturin.

Much like the movies assigned in the Management Theory and Application course, the films assigned in the Business, Ethics and Governance course are widely and inexpenisably available through various sources and in various media formats.

**SETTING THE STAGE FOR “A NIGHT AT THE MOVIES”**

The purpose of the “A Night at the Movies” project is to have students’ initial collaboration focus on a common task. For example, students are asked to work in groups of four to determine how they will access the movie. Assigning the task of accessing the film as a student group responsibility rather than a faculty responsibility has two immediate benefits. The first benefit is that very early in the term, each student group must quickly communicate within their group to share ideas on how they can access the movie. Because these early communications are focused on a very clear task, the students are quick to make suggestions to each other to ensure everyone has access to the film. While all of the students need to view the movie the same week, they do not need to view it at the same location. Working together to share ideas, students quickly identify several options for accessing the film and share their ideas, even at times, with students in different groups. The second benefit to the “A Night at the Movies Project” is that it removes the logistical and copyright challenges for the faculty member, a move that ultimately makes utilizing a movie a more attractive teaching tool. As stated earlier, faculty frequently experience many logistical challenges in utilizing videos as a teaching tool (Clemens & Carr 2010), making them less likely to incorporate films into their courses.

The actual assignment for each of the motion pictures is the same. Within their respective groups, students have the shared responsibility, particularly well because the students feel an ownership with their respective portions of the responses and frequently engage in adding additional insights and information supporting why their responses are accurate and complete. Lastly, each group, working in the small group Discussion area or “chat” area, identifies which responses from a group other than their own best reflects and advances the topic being discussed that week. Additionally, students also provide a rationale to substantiate their choice of responses.

The particular questions for each movie may vary from term to term, but the question structure and intent remain consistent. For example, students are asked to work in groups to identify specific situations and behaviors in the movie that correspond with a theory or concept from the course reading materials. The questions focus not only on explicit behavior but also on more intrinsic factors that may be influencing the situation in a more subtle way. Students analyze the situation according to concepts and theories discussed in the course and then evaluate if the behavior in the movie was effective. If the behavior was viewed as effective, students share why they believe it to be effective and support their view from course materials and other sources. If there is a better management, leadership or business ethics alternative, students share their perspectives on what approach may have been more effective, and they provide supporting information on that view, as well. The instructor’s vital responsibility in formulating the questions almost cannot be overemphasized. As Brookfield (1987) argued, developing purposeful and insightful questions that require students to analyze and evaluate options is possibly the most important step in preparing for student discussions.

**STUDENT REACTIONS AND LESSONS LEARNED**

Students’ reactions and comments across each of the facets of the assignments have been extremely positive. It is particularly heartening to observe the online “chat” area as the students guide each other in accessing the videos, navigating the different cable providers, streaming options, rental and lending alternatives and other services. By helping the students interacting and providing support for each other very early in the term, it is likely that the students feel more connected to each other (Badura 2002).

One behavior that was observed while monitoring the online chat sessions was that if a particular student was not participating in the discussion, the other students would intentionally ask the non-participating student for his or her thoughts. It became apparent that the groups wanted to gather as many views as possible with which to work for creating their group’s response for the whole-class discussion. Because the first round of response sharing is only among members of the respective groups, each student’s response mattered. Student non-participation, a frequent problem in the online learning environment, is minimized because in the small group structure, each student’s response matters. Students demonstrated responsibility not only for their individual engagement in their group, but also for the collective engagement of the group. This sense of accountability to each other may lead to improved student retention (Zodynev, deNoyelles, & Seo 2012).

It was also observed that students carefully edited and modified each group member’s responses before sharing them in the whole-class discussion. Building on each other’s work, the students collaborate to confirm and create knowledge while at the same time constructing a shared concept that they will explain to the class. This student-to-student interaction can deepen students’ understanding of the course content because the students must provide responses and be prepared to share their reasoning for those responses.

Questions prepared by the instructor played a significant role in the group discussions. For example, asking students to have meaningful discussions requires preparing good questions before the discussion. Socratic or probing questions can be mixed with open-ended questions in order to elicit more information and explore or challenge assumptions. Occasionally, thought-provoking or bold statements can encourage students to take a strong position and require them to share the rationale for their opinions. It is important for the instructor to choose questions that elicit differing views (Brookfield 1987).

The fact that none of the selected movies was of a recent vintage produced another interesting finding. Many of the students observed that while they had viewed the movies previously, they had not “viewed it with the lens of management” or through the perspective of business ethics. Many students commented they “saw behaviors in a new light” and that the movies made some of the course concepts “more like real life than theories from a book.” One student commented, “It was much more fun to watch the non-student-oriented way movies than just having them assigned to me.”

Others shared that they were “surprised by all of the differing views about the same movie” and that considering the diverse perspectives “may be helpful in understanding and managing others in the workplace.” Some students have enthusiastically shared the titles of additional movies for faculty to consider for use in future classes.

**GOING FORWARD**

As universities continue to move additional classroom-based courses to the online or hybrid environment, we believe that utilizing movies as a shared experience will be an effective teaching tool in these other courses. From our experience, students enjoyed the experience of watching films through their newly discovered lens of the course content, discussing the movies with their classmates, and applying this experience to reinforce the course objectives. Further, by placing both the responsibility for accessing the movies and the initial gathering of student responses at the group level, students seemed to be more engaged in the entire process. Regarding the use of the group chat for eliciting the first level of response, one student observed, “If you don’t post your response in a discussion for the whole class, the only person [...] who notices is the faculty member. When you don’t post this response in the small group area, the group will get after you!” Perhaps most importantly, students were able to view and respond to course concepts and theories in context while contemporaneously having the opportunity to gain insight on diverse perspectives.

Further exploration and research is necessary to know if this type of shared experience is linked to student engagement in the online or hybrid course environment. For example, additional information will be needed to determine whether this model would be as successful if applied to undergraduate business courses and undergraduate students. Furthermore, as budget constraints and other reasons push universities to increase their online and hybrid course offerings, research should be conducted to test the success of this shared movie experience model in other business courses. Currently movies are utilized in a number of classroom-based business courses with courses as diverse as Business Law, Legal Environment of Business, Auditing, Forensic Accounting, Fraud Examination,
and Corporate Taxation. Using movies as a means to create a shared experience, coupled with the opportunity for small-group and whole-class discussion may prove to be an effective and enjoyable approach to engage a diverse set of students involved in online and hybrid courses across the business curricula. As discussed by Tyler, Anderson, and Tyler (2009) including movies, television, film clips or other popular media in classes fosters real-life connections to the course content and is likely to continue to be a successful approach as universities work with multiple generations of learners. As faculty, we must continue to ask what teaching practices will engage learners in the burgeoning online and hybrid course environment.

REFERENCES


STUDENT ACADEMIC COACHES
MAKING A DIFFERENCE

Our Academic Coaches are students who not only excel in academics, but also excel in communicating and building relationships with their peers who come to the Lab for academic support. When students initially come in for help, our first focus is building connections with them. During that first meeting, after introductions and small talk, we address their problems and find out why they have come for help. We also establish each student’s goals and dreams and emphasize that it all ties into what the student is doing now in school and why academic success is a stepping stone toward the ultimate goals.

Also during that first meeting, we ask the students what expectations they have of the Lab and ask them if they have any concerns or apprehensions. We also share our own expectations for our students and what we hope they get out of this experience. The goal of this Lab is to teach students to take control of their learning and learn how to fine-tune the way they study to achieve the best results. The students will learn about Bloom’s Taxonomy (the different levels of learning) and reflect on what level of learning they are currently using. Students also learn about the Study Cycle and how using the Study Cycle helps them climb up the higher levels of learning. Finally, we go over the Intense Study Session and how that allows the mind to work at higher levels of learning.

As we work with students and review and teach them the substantive material they are learning in their classes, we try to remind the students to use metacognition and be mindful of which learning and study strategies are working for them and which are not working. Our one-on-one meetings with students model the Intense Study Session format so that students become comfortable with it and begin to use it when they study on their own. At every session, we set specific goals so that when the student is ready to leave, the student and coach are ready to create an action plan for the student to accomplish on their own. This system allows our Coaches as well the students to continually assess the students’ progress and whether the current strategies for learning are working. The Metacognition Lab has now been operating for 4 years, growing from serving 38 students the first year to now getting more than 1800 student visits per semester with over 200 students each semester coming regularly for one on one study sessions. Considering that our student population is around 1750, we are serving a large percentage of our student body.
**METACOGNITION LAB CONTINUES TO MAKE A DIFFERENCE**

The Metacognition Lab continues to increase services and performances of students every single semester. During the Fall 2014 semester, the Lab had over 1,800 student visits. Over 500 students attended presentations and workshops. The Academic Coaches performed approximately 1,100 one on one study sessions to 287 students. Out of those students, 89% ended the semester with a 2.0 GPA and 54% ended with over a 3.0 GPA. The average semester GPA for students served by the lab was a 2.9. The Lab saw a retention rate of 89% of the students who received one on one help. The true retention rate was probably even higher because many of those who did not return had GPA's over 3.5 and it seems likely that they transferred schools.

So far, during the spring 2015 semester, we have already had over 2,023 student visits. We have presented 13 workshops, which include workshops on Test Anxiety, Learning Styles, Motivation and Study Strategies, How to Study for Math, and Passing the English Proficiency Exam. Over 381 students have attended these workshops. Generally, fewer students attend our spring workshops because most of these workshops are presented to new, incoming students and we have less students enrolling for the first time in the spring. The Metacognition Lab collaborates with First Year Enrollment Orientation and Freshman Year Academy, all freshmen, at the very least, attend both the Learning Styles and Study Strategies workshops. There were 14 students who did not attend any workshop and 13 of these students needed help in improving their study habits. We have over 190 students who are coming to the lab for help. The lab was a 2.9. The Lab saw a retention rate of 89% of the students who received one on one help. The true retention rate was probably even higher because many of those who did not return had GPA's over 3.5 and it seems likely that they transferred schools.

*pour la suite de l'article*
D come in almost every day to work on his paper. He was working on it himself and I was proud of that achievement. I was able to monitor him and answer his questions. In the end, it was his grade and he earned it. I was very proud of how far he came.

Student E is a freshman and is also a part of the Purple Marching Machine Band. I have helped him in English 101 for the fall semester and currently English 102 for the spring. He is very enthusiastic when it comes to drafting an essay. I would always help him in his prewriting and drafting stages. He would always come to me with well written paragraphs and his work was pretty good. In fact, he would always let me read his instructor notes on some of the things he would write in class. His instructor always told him his work was good, but E must have wanted to do great. I admired his zeal to be a great writer. E would come to the Metacognition Lab after his English class to begin working on his papers. He asked questions and made sure he understood what I was saying before I could even ask him any questions. Currently, E is excelling in his English 102 class and is able to write a draft on his own. I am personally proud of E because he has not let the band affect his academics and he works hard to maintain a good academic average.

Student F is a junior and a classmate of mine. I personally saw him struggling in our classes that we had together. He is on the football team and suffered from a knee injury. His physical therapy caused him to miss a couple of class meetings and he fell behind. I insisted he come to the Metacognition Lab to work on his assignments. He resisted at first and then he finally came in. He expressed to me that he felt lost in class and overwhelmed because of his football schedule. I gradually brought F up to speed in the class. At the end of the fall semester, F raised his grades in those classes to an A and B. He was so excited he got through the semester. He personally thanked me for getting him through the most difficult semester he has experienced at Miles College. This filled my heart with joy knowing I was not just an academic coach for him but a mentor as well.

Student G is a freshman non-traditional student who visits the lab regularly to get help with his math assignments. I have been working with him over the past semester so I have gotten to know a little about his personal life. He resides in Birmingham, AL where he was raised on west side. He describes the struggles that he faced while growing up such as drug abuse, gang violence, and dealing drugs. He finally decided to get his life on the right path by enrolling into Miles College. He has explained numerous times that he is not the strongest in math so I have to go slow with him. G is a challenging individual to work with because of his strong personality and street mental-
This page intentionally blank.
BACKGROUND

According to Bloom’s taxonomy of educational objectives, a common tool for assessing and defining learning outcomes, there are six higher learning knowledge-based goals. The goals are presented in order of expertise: 1.) knowledge, 2.) comprehension, 3.) application, 4.) analysis, 5.) synthesis, and 6.) evaluation (University of North Carolina at Charlotte, Center of Teaching and Learning, 2015). In the hierarchy of the taxonomy, these six components appear in order of difficulty to master. Thus, of the six, knowledge and comprehension are considered to be lower level learning objectives. For any graduate student to be well prepared for success in his/her field of study, higher levels of learning must be achieved. As professors of higher education, we strive to facilitate this type of learning by utilizing the four remaining knowledge-based objectives that are more difficult to master. Bloom’s defines these objectives as follows:

- Application – Apply abstractions, general principles, or methods to specific concrete situation.
- Analysis – Separation of a complex idea into its constituent parts and an understanding of organization and relationships between parts
- Synthesis – Creative, mental construction of ideas and concepts from multiple sources to form complex ideas into a new integrated, and meaningful pattern subject given constraints.
- Evaluation – To make a judgment of ideas or methods using external evidence or self-selected
The Use of Simulation and Cases to Teach Real World Decision Examples for Health Care Management Graduate Programs

Problem-based learning (PBL) is defined as an "instructional (and curricular) learner-centered approach that empowers learners to conduct research, integrate theory and practice, and apply knowledge and skills to develop a viable solution to a defined problem" (Savery, 2006, p.9).

It is an active learning approach in which students, working in small groups, try to solve a problem. (University of Delaware, Institute for Transforming Undergraduate Education, n.d.). This active approach engages and motivates students, not only to solve a problem, but also to find and apply the knowledge. (University of Delaware, n.d.).

The role of the instructor in problem-based learning is to "facilitate group process and learning—not to provide easy answers" (University of Delaware, Faculty, n.d.). The challenge facing instructors who use a PBL model is ensuring the development of strong problems that can be resolved by students. (University of Delaware, n.d.). These problems "must be ill-structured and allow for free inquiry into the real world are ill-structured or (they would not be problems)." (Savery, 2006, p.13).

Problem based case learning (PCBL) is similar to PBL, since both approaches are learner centered and problem based. However, PCBL "enables educators to design scenario-based learning situations based on current and authentic problematic situations encountered at local businesses." (Nashville State Technical Community College, 2011).

Types of problem based learning models include: the use of scenarios, simulations (live or computer-based), case studies, consulting projects and community based research. Many of the models may incorporate an interdisciplinary approach. This article presents and examines the use of an in-class simulation as well as the use of real world consulting projects in graduate learning to effectively teach appropriate decision-making and evaluation.

A reciprocal relationship exists among all parties. See Figure 1.

**APPLIED EXAMPLES**

Types of problem based learning models include: the use of scenarios, simulations (live or computer-based), case studies, consulting projects and community based research. Many of the models may incorporate an interdisciplinary approach. This article presents and examines the use of an in-class simulation as well as the use of real world consulting projects in graduate learning to effectively teach appropriate decision-making and evaluation.

<table>
<thead>
<tr>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhances retention</td>
</tr>
<tr>
<td>Develops true sense of the challenges facing real world in chosen field</td>
</tr>
<tr>
<td>Able to apply new competencies to real situations</td>
</tr>
<tr>
<td>Increases professional networking</td>
</tr>
<tr>
<td>Better transfer knowledge, skills, and attitudes to new environments and situations (University of Delaware, Students, n.d.;)</td>
</tr>
</tbody>
</table>

Problem based learning facilitates the group process and brings students into the real world and allows them to react and resolve issues that are presented beyond the limitations of the classroom (University of Delaware, n.d.). In addition, the instructors:

- Are better able to create and manage a highly effective classroom environment, regardless of their experience level
- Are better able to prepare their students for subsequent STEM education and for the workplace
- Find their work more enjoyable and stimulating (Nashville State Technical Community College, Benefits to Instructors, 2009-2011).

Through PCBL, the business partner, with little or no additional costs, gains an opportunity to:

- recruit talent
- acquire research and exploration of new ideas
- market the organization

A reciprocal relationship exists among all parties. See Figure 1.

**Figure 1**

**NASHVILLE STATE TECHNICAL COMMUNITY COLLEGE, PBCL BASICS, 2009-2011**

**Instructors**

**Business Partners**

**Students**

**Problem-Based Case Learning transpires in the overlapping concerns of students, instructors, and business partners.**

**Step One**

The quality team from a local hospital system provided an in-class lecture concerning patient flow, errors rates, and quality in the hospital setting. The team presented a scenario discussion involving a current/typical process of patient throughput (the total time through the system/process).

**Step Two**

The classroom was arranged using separate tables for the following hospital process points: Registration, Emergen-cy Department (ED) waiting room, Radiology, Lab, Viral Signs Room, and Exam Room. Students were assigned to specific roles (i.e., doctor, nurse, medical technician, registration clerk, etc.) and specific tables/departments to conduct an assigned medical task pertaining to that department. The other assigned student roles were patients and observers. There were a total of thirteen (13) students participating in this class. The students, as a group, were asked to determine the most efficient ED set-up and process. Based on their judgments they assigned staff to particular departments (Note: the students were given a specific number of doctors, nurses, and clerical staff to assign).

Students were provided a spreadsheet to calculate the total throughput time, error rates, rates per step in the process, and wait times. Students were also provided a Lego® board. The premise for the simulation was to begin with a "patient" at the start of the process, which was symbolized as a blank Lego® board, and then add to the board as the "patient" went through the process of an ED visit. Each department was assigned a certain Lego® color-shaped piece (red block rectangle for ED, blue square for registration, etc.), a Lego® board, and a sticker, to be initialed. As the "patient" went through the process, the Lego® pieces were each attached accordingly. An error was tallied if the students skipped a step in the process, did not attach the Lego® piece correctly, did not place the sticker correctly or at all, or did not sign/initial the sticker piece.

**Step Three:**

Once the "patient" was through the entire process, students then analyzed their error rates, rates per process step, wait times, and total throughput time. Students were given an opportunity to make changes to the staffing, set-up of the ED simulation, and overall adjustments to the process to minimize steps and potentially minimize errors.
Step Four:
Students ran through the simulation a total of four times. Prior to each time, they analyzed their outcomes, made changes accordingly, and discussed the impact of their changes. Based on the analysis of outcomes, the students ultimately chose the best ED setup and staffing assignments for each of the four simulations. Students based their choice on the most efficient and quality outcomes with the least amount of error.

Outcomes
The above-described simulation is based on a very common problem encountered by hospital emergency departments. In fact, the local hospital, which partnered to implement this classroom simulation, actually uses the same simulation to train its hospital staff about efficiency and flow. Students were able to work together as a team to streamline an ED patient flow and adequately assign resources, as well as ensure proper patient safety. Students collectively achieved learning outcomes, which were based on real world healthcare operations.

In addition to making appropriate decisions to improve patient flow, the ED simulation was focused on two other learning objectives. First, the students were to gain competencies in operations planning and efficiency to include all major resources: staffing, equipment, and scheduling. Secondly, students were to apply operations management and process improvement skills to ensure the most efficient and well-utilized ED patient flow throughout the system process simulation. All students in this course reported an increase in their ability to evaluate and choose appropriate process improvement techniques in a variety of healthcare settings. Thus, learning objectives were successfully accomplished in a creative and real world simulation!

Furthermore, students were later given a team based assignment to prepare a process improvement project based on their analysis of a case study. The participation of this simulation positioned students to accomplish the case study analysis successfully. It is the belief of the professor that the simulation also provided a solid foundation in decision making analysis and evaluation, such that when presented with similar scenarios in the field, graduates of the program will rely on what they have learned in the classroom and be able to apply their knowledge to multiple situations that they may face as practitioners in the field.

SECOND EXAMPLE: STRATEGIC PLANNING & MARKETING CONSULTING PROJECT
Graduate students enrolled in Strategic Planning and Marketing in Healthcare, participated in consulting projects involving real world clients seeking to overcome current strategic challenges. The clients were both non-profit healthcare organizations: one national and one local. The students, working in teams, conducted research, analyzed data and developed marketing and strategy recommendations, which were presented to the clients for consideration and use.

A total of twenty-three (23) students were assigned in teams. The teams assumed the role of a consulting group and prepared an analysis report for the chosen organization. The initial team assignments were based on group interviews conducted by the course professors, which assessed the student’s individual strengths and weaknesses, along with interests and experiences. Teams were assigned according to the information provided during the interview phase. Four teams were assigned to one of the two clients, who each presented two critical strategy issues.

The national non-profit healthcare service organization projects involved the following: 1.) an organizational culture shift/change management scenario, and 2.) reducing the physical footprint while maintaining and building upon the current community presence. The other client, a local non-profit healthcare clinic, presented the following issues: 1.) the exploration of marketing methods to reach donors and other key stakeholders, and 2.) the development of a functional website as a marketing and social media tool.

The student consulting teams were asked to work with the clients throughout the semester. The teams were responsible for ongoing communication with the clients and professors, resolving team conflict issues, and providing work-plan reports periodically. Each team chose a team leader. The role of the leader was to facilitate key meetings and keep the team on target for meeting key milestones.

In general, the teams prepared an in-depth assessment of the outlook, potential, and strategic viability as it pertained to each of the assigned projects. Each team presented a final presentation outlining their recommendations to the clients. Each client along with the course professors evaluated the student projects based on the application and synthesis of marketing and strategic planning knowledge and skills. Students were also evaluated on the ability to demonstrate critical analysis skills, business communication, and professional organizational recommendations.

Outcomes and Results
Each team presented to an audience consisting of: classmates, clients, and the professors. The teams fielded questions from the entire audience. Both professors and clients judged the projects. The results were as follows:

1. All teams scored a satisfactory or above on the ability to create an original analysis throughout the project by going beyond merely summarizing or paraphrasing key points.
2. All teams scored above a satisfactory on the ability to show insight into the meaning of the content discussed and explored.
3. All teams scored above a satisfactory on the ability to tie together disparate parties of the analysis (synthesis) to make a strong case for their position taken.

Throughout the semester, students had an opportunity to develop an ongoing relationship with their client. Students were responsible for developing and implementing an approved work plan that would meet the client’s needs and monitor major project milestones. All teams had at least one client site visit as well as a minimum of two conference calls. These activities and responsibilities, not only ensured that the students were meeting the course deliverables and objectives as well as the client’s demands, but also helped to create a real-world professional relationship between the students, as consultants, and the organizations, as real clients.

Students working with the larger non-profit client on the project involved the premise of organizational change, making several appropriate strategy recommendations. Their ideas included: developing lead volunteer positions, developing a volunteer liaison position, recruiting interns from local universities, and conducting a team building workshop for volunteers and employees. The strategies presented by the students working on the project involved lessening the physical footprint of the organization while maintaining/expanding the target market included: enhancing community partnerships, implementing a digital campaign, and adding annual events. Students working with the non-profit clinic made strategy recommendations, which were presented to the clients for consideration and use.

Both clients were able to use the students’ analysis and research to the benefit of the organization. Furthermore, several of the strategy recommendations made by the student teams were implemented by the organizations. Students received initial feedback during the presentation session and were able to hear directly from the clients about the viability of the strategies presented and whether or not these would be implemented.

Real world projects and simulations are highly beneficial to promote higher learning objectives. In addition to accomplishing the learning objectives, as discussed, the use of the real world scenarios and simulation described in this article offered students and professors many additional unforeseen benefits. To name a few, the professors were able to develop and enhance professional relationships with community partners, expand their students’ professional network, allow students a field based forum to demonstrate project management skills, and allow students an intimate view of client’s changing needs. Student feedback supported the need to keep the real world scenarios part of both the Operations course, as well as the Strategic Planning and Marketing course in the future.

REFERENCES
This page intentionally blank.
JOINT CONFERENCE  
May 24th, 25th and 26th 2017 in  
Nashville, TN

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.