<table>
<thead>
<tr>
<th>Author Name</th>
<th>Paper #</th>
<th>Title (Click title to view paper)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adkins, Megan</td>
<td>118</td>
<td>Keeping The Physical Educator “Connected” – An Examination Of Comfort Level, Usage And Professional Development Available For Technology Integration In The Curricular Area Of Physical Education</td>
</tr>
<tr>
<td>Al-Thobaiti, Hanan</td>
<td>499</td>
<td>Saudi Students Experiences Of Service – Learning In U.S. Universities: A Phenomenological Study</td>
</tr>
<tr>
<td>Al-Thobaiti, Sultan</td>
<td>499</td>
<td>Saudi Students Experiences Of Service – Learning In U.S. Universities: A Phenomenological Study</td>
</tr>
<tr>
<td>Al-Zwaylif, Inaam M.</td>
<td>335</td>
<td>Evaluating Environmental Performance: A Balanced Scorecard Approach</td>
</tr>
<tr>
<td>Alismail, Halah</td>
<td>295</td>
<td>Multicultural Education: Teachers’ Perceptions And Preparation</td>
</tr>
<tr>
<td>Almohawis, Khaled</td>
<td>511</td>
<td>Memory In Plato, Cicero, Quintilian, Longinus, And Augustine</td>
</tr>
<tr>
<td>Alowaydhy, Afrah</td>
<td>185</td>
<td>Personal Perspective Paper: Multicultural Competence And Art Education As A Theoretical Framework</td>
</tr>
<tr>
<td>Alpert, Madelon</td>
<td>505</td>
<td>Increasing Social Skills: Autistic Learners Interact With Robots</td>
</tr>
<tr>
<td>Alqurashi, Emtinan</td>
<td>369</td>
<td>Involving Students In Collaborative Learning And Learning Strategies: A Comparative Analysis Of Online And On-Campus Students</td>
</tr>
<tr>
<td>Alrajhi, Noor Sharaf</td>
<td>303</td>
<td>Training Teachers To Avoid Losing Giftedness</td>
</tr>
<tr>
<td>Ardito, Richard</td>
<td>302</td>
<td>Personalized Weekly Overviews: A Comparison Of Text And Video Notifications Measuring Student Engagement, Achievement And Misunderstanding In An Online Classroom</td>
</tr>
<tr>
<td>Aritz, Jolanta</td>
<td>145</td>
<td>The Future Of Leadership: Men, Women, And Leader Communication</td>
</tr>
<tr>
<td>Babb, Stephanie</td>
<td>102</td>
<td>Academic Entitlement in Nontraditional Undergraduates</td>
</tr>
<tr>
<td>Baek, Kang</td>
<td>241</td>
<td>Vertical Relations And Investment Decision-Making In The Equity Fund Market: Evidence From Korea</td>
</tr>
<tr>
<td>Beaulieu, Tanya</td>
<td>472</td>
<td>Increasing Individual Absorptive Capacity By Teaching Dynamic SQL</td>
</tr>
<tr>
<td>Belcastro, Amy</td>
<td>187</td>
<td>Higher Education Responsive Teaching Strategies: Supporting Culturally And Linguistically Diverse (CLD) Students</td>
</tr>
<tr>
<td>Bennett, Carol</td>
<td>429</td>
<td>Engaging Middle Level Learners In Science Through Picture Book Read-Alouds</td>
</tr>
<tr>
<td>Bice, Matthew R.</td>
<td>118</td>
<td>Keeping The Physical Educator “Connected” – An Examination Of Comfort Level, Usage And Professional Development Available For Technology Integration In The Curricular Area Of Physical Education</td>
</tr>
<tr>
<td>Billington, Maryann G.</td>
<td>475</td>
<td>Leadership Disruption: Challenges And Implications For Teaching Leadership</td>
</tr>
<tr>
<td>Black, Melva</td>
<td>479</td>
<td>Using New Technologies In Speech Communication To Enhance Cultural Competence</td>
</tr>
<tr>
<td>Bodendorf, Freimut</td>
<td>161</td>
<td>Virtualization Of Retail By Interactive Shopping Windows</td>
</tr>
<tr>
<td>Bonnstetter, Ronald J.</td>
<td>515</td>
<td>Navigating And Negotiating Dispositional Distances In An Undergraduate Environmental Program Using Business-Based Assessments To Enhance Collaboration Across Disciplinary Divides</td>
</tr>
<tr>
<td>Bretones, Paulo S.</td>
<td>408</td>
<td>Surprising Insights From The Istar International Study Of Astronomy Education Research Database</td>
</tr>
<tr>
<td>Brooks, Cindy</td>
<td>431</td>
<td>Teaching Interprofessional Communication As An Interprofessional Team</td>
</tr>
<tr>
<td>Author</td>
<td>Page</td>
<td>Title</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>------</td>
<td>-------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Byun, Hae-Young</td>
<td>465</td>
<td>Voluntary Timely Disclosure Prior to Delisting</td>
</tr>
<tr>
<td>Callahan, Lydia</td>
<td>447</td>
<td>Contemporary Usage Of The Zero-Derivational Denomination Verbs</td>
</tr>
<tr>
<td>Callen, Jeffrey L.</td>
<td>349</td>
<td>Growth Opportunities, Leverage And Financial Contracting: Evidence From Exogenous Shocks To Public Spending</td>
</tr>
<tr>
<td>Carrigan, Martin</td>
<td>270</td>
<td>Social Media Ethics And The NFL</td>
</tr>
<tr>
<td>Carter-Snell, Catherine</td>
<td>198</td>
<td>Using A Dating Violence Prevention Project To Educate Social Work Students</td>
</tr>
<tr>
<td>Carter, Charity</td>
<td>504</td>
<td>Student Led Discipline: How Giving Students Control Of The Classroom Decreases Behavior Problems And Increases Student Efficacy</td>
</tr>
<tr>
<td>Chae, Soo-Joon</td>
<td>333</td>
<td>Earnings Management Using Classification Shifting. Evidence From South Korea</td>
</tr>
<tr>
<td>Chalmers, Darlene</td>
<td>229</td>
<td>Looking Inward: Exploring The Use Of Reflexive Photography In Social Work Field Education</td>
</tr>
<tr>
<td>Chen, Hsiang-Ting</td>
<td>540</td>
<td>Applying 3D Printing In A Living Technology Course To Foster Student's Creativity</td>
</tr>
<tr>
<td>Chiu, Chih-Chieh (Jason)</td>
<td>362</td>
<td>Portfolio Effects Of VIX Index Investment</td>
</tr>
<tr>
<td>Chiu, Po-Han</td>
<td>538</td>
<td>Design And Implementation Of Interdisciplinary STEM Instruction- A Case Study Of Computational Physics</td>
</tr>
<tr>
<td>Choi, Jiye</td>
<td>510</td>
<td>The Strategies For Flipping The Classroom To Enhance Student Engagement In Higher Education</td>
</tr>
<tr>
<td>Choi, Jiye</td>
<td>517</td>
<td>Analysis Of The Status Of K-MOOC For Sustainable Development</td>
</tr>
<tr>
<td>Choi, Seonhee</td>
<td>524</td>
<td>Preliminary Study For Development And Validation Of A Authentic Scale</td>
</tr>
<tr>
<td>Chy, Mahfuz</td>
<td>349</td>
<td>Growth Opportunities, Leverage And Financial Contracting: Evidence From Exogenous Shocks To Public Spending</td>
</tr>
<tr>
<td>Collins, Cristina</td>
<td>416</td>
<td>Exploring Facilitating Factors In The Development Of Global Leaders</td>
</tr>
<tr>
<td>Conrecode, Jacqueline R.</td>
<td>215</td>
<td>Financial Consequences Of Recognizing Goodwill As A Contra-Equity Account</td>
</tr>
<tr>
<td>Conway, Jacquie</td>
<td>108</td>
<td>Instructional Skills Workshop (ISW) - Africa</td>
</tr>
<tr>
<td>Corbett, Emily</td>
<td>447</td>
<td>Contemporary Usage Of The Zero-Derivational Denomination Verbs</td>
</tr>
<tr>
<td>Coson, Murniz Allen Vasay</td>
<td>513</td>
<td>The Interaction Of Relative Political Capacity And Economic Growth To Attract Foreign Direct Investments At The Provincial Level In Indonesia</td>
</tr>
<tr>
<td>Crone, Travis</td>
<td>102</td>
<td>Academic Entitlement in Nontraditional Undergraduates</td>
</tr>
<tr>
<td>Crosby, III, Robert G.</td>
<td>258</td>
<td>Building Strong Faculty-Student Relationships: A Path To Lower Attrition Rates At Online Universities</td>
</tr>
<tr>
<td>Cunha, Luis</td>
<td>422</td>
<td>The Impact Of Economic Growth And Development On The Environment Of A Gaming Destination</td>
</tr>
<tr>
<td>Davis, Dirk M.</td>
<td>189</td>
<td>Automated Assessment: Developing A Community Of Collaboration</td>
</tr>
<tr>
<td>Davis, Dirk M.</td>
<td>190</td>
<td>E-Mentorship: Providing Support to Non-Traditional Learners</td>
</tr>
<tr>
<td>Di Fuccia, David-Samuel</td>
<td>135</td>
<td>Lab Work As An Everyday Assessment Tool</td>
</tr>
<tr>
<td>Di Fuccia, David-Samuel</td>
<td>147</td>
<td>Contemporary Science In Chemistry Education In Germany</td>
</tr>
<tr>
<td>DiDonata, Toni</td>
<td>416</td>
<td>Exploring Facilitating Factors In The Development Of Global Leaders</td>
</tr>
<tr>
<td>Do, Kanghyuk</td>
<td>525</td>
<td>Analysis Of Selection Patterns Between Intertemporal Choice Depending On Gain And Loss Frame</td>
</tr>
<tr>
<td>Author</td>
<td>Page</td>
<td>Title</td>
</tr>
<tr>
<td>--------</td>
<td>------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Duffy, Sarah</td>
<td>446</td>
<td>Enhancing Active Learning Through The Use Of Technology</td>
</tr>
<tr>
<td>Dukhaykh, Suad</td>
<td>451</td>
<td>Breaking Barriers: Saudi Women In Non-Traditional Careers</td>
</tr>
<tr>
<td>Dulmus, Catherine N.</td>
<td>176</td>
<td>Enhancing Evidence-Based Practice Knowledge In Mental Health: An Educational Model For Workforce Development</td>
</tr>
<tr>
<td>Dunbar, Scott</td>
<td>302</td>
<td>Personalized Weekly Overviews: A Comparison Of Text And Video Notifications Measuring Student Engagement, Achievement And Misunderstanding In An Online Classroom</td>
</tr>
<tr>
<td>Dupin-Bryant, Pamela A.</td>
<td>472</td>
<td>Increasing Individual Absorptive Capacity By Teaching Dynamic SQL</td>
</tr>
<tr>
<td>Ensign, Prescott C.</td>
<td>520</td>
<td>Renegotiating Psychological And Moral Contracts: I Made You Millions And You Paid Me Pennies!</td>
</tr>
<tr>
<td>Erickson, Sheryl</td>
<td>499</td>
<td>Saudi Students Experiences Of Service – Learning In U.S. Universities: A Phenomenological Study</td>
</tr>
<tr>
<td>Finck, Joseph E.</td>
<td>519</td>
<td>An Update On Big Physics In Small Places</td>
</tr>
<tr>
<td>Focht, Jeffrey</td>
<td>404</td>
<td>Megatrends In American Higher Education: A Management Scorecard For Strategic Planning</td>
</tr>
<tr>
<td>Frevert, Mareike</td>
<td>147</td>
<td>Contemporary Science In Chemistry Education In Germany</td>
</tr>
<tr>
<td>Garg, Ajay K.</td>
<td>428</td>
<td>To Study The Interlinkage Between Quality Of Work-Life And Performance Of Workers In Handicraft Sector Of Canada</td>
</tr>
<tr>
<td>Gilfoil, David M.</td>
<td>404</td>
<td>Megatrends In American Higher Education: A Management Scorecard For Strategic Planning</td>
</tr>
<tr>
<td>Goitom, Mary</td>
<td>229</td>
<td>Looking Inward: Exploring The Use Of Reflexive Photography In Social Work Field Education</td>
</tr>
<tr>
<td>Gosselin, David</td>
<td>515</td>
<td>Navigating And Negotiating Dispositional Distances In An Undergraduate Environmental Program Using Business-Based Assessments To Enhance Collaboration Across Disciplinary Divides</td>
</tr>
<tr>
<td>Granigan, Terri</td>
<td>431</td>
<td>Teaching Interprofessional Communication As An Interprofessional Team</td>
</tr>
<tr>
<td>Grant, Michael</td>
<td>265</td>
<td>Quantifying Assessment Of Undergraduate Critical Thinking</td>
</tr>
<tr>
<td>Gu, Jayoung</td>
<td>523</td>
<td>The Motivational Aspects Of Autonomy On Decision Making</td>
</tr>
<tr>
<td>Guffey, Sarah Katie</td>
<td>409</td>
<td>First Results From Administering The Exam Of Geology Standards EGGS</td>
</tr>
<tr>
<td>Hagan, Eric</td>
<td>404</td>
<td>Megatrends In American Higher Education: A Management Scorecard For Strategic Planning</td>
</tr>
<tr>
<td>Harrison, Justin</td>
<td>113</td>
<td>Use Of Multimedia Instruction In Online STEM Education</td>
</tr>
<tr>
<td>Hebbeler, John</td>
<td>424</td>
<td>Modes, Technology, And Collaboration</td>
</tr>
<tr>
<td>Heinz, Michael</td>
<td>449</td>
<td>How Definiteness Is Interpreted From Korean To English And Spanish</td>
</tr>
<tr>
<td>Henke, Trent S.</td>
<td>128</td>
<td>Government Reporting Timeliness and Municipal Credit Market Implications</td>
</tr>
<tr>
<td>Holmes, Rachel J.</td>
<td>286</td>
<td>Service Learning And Experiential Learning Opportunities In Higher Education</td>
</tr>
<tr>
<td>Huang, Tsan-Chieh</td>
<td>540</td>
<td>Applying 3D Printing In A Living Technology Course To Foster Student's Creativity</td>
</tr>
<tr>
<td>Jan, Ihsanullah</td>
<td>374</td>
<td>The Effects Of Frontline Employees' Challenge And Hindrance Stressors On Emotional Exhaustion, Job Satisfaction, And Turnover Propensity: The Moderating Role Of Resilience</td>
</tr>
<tr>
<td>Jang, Jeonga</td>
<td>510</td>
<td>The Strategies For Flipping The Classroom To Enhance Student Engagement In Higher Education</td>
</tr>
<tr>
<td>Name</td>
<td>Page No.</td>
<td>Title</td>
</tr>
<tr>
<td>-----------------------</td>
<td>----------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Jang, Jeonga</td>
<td>517</td>
<td>Analysis Of The Status Of K-MOOC For Sustainable Development</td>
</tr>
<tr>
<td>Jeong, Eui Jun</td>
<td>202</td>
<td>What Psychosocial Interventions Work For Players’ Aggression, Depression, And Loneliness? Effect Of Therapeutic Catharsis And Life And Game Self-Efficacy</td>
</tr>
<tr>
<td>Ji, Seong-goo</td>
<td>374</td>
<td>The Effects Of Frontline Employees’ Challenge And Hindrance Stressors On Emotional Exhaustion, Job Satisfaction, And Turnover Propensity: The Moderating Role Of Resilience</td>
</tr>
<tr>
<td>Jiang, Ying</td>
<td>326</td>
<td>What Will Trigger A Non-Buyer To Become A Buyer? An Investigation Of China’s Potential Luxury Goods Market</td>
</tr>
<tr>
<td>Jo, Suyoung</td>
<td>522</td>
<td>A Relation Between Emo-Diversity And Cognitive Flexibility</td>
</tr>
<tr>
<td>Johnson, Ruth</td>
<td>102</td>
<td>Academic Entitlement in Nontraditional Undergraduates</td>
</tr>
<tr>
<td>Johnson, Sam</td>
<td>244</td>
<td>A Competency-Based Technical Training Model That Embraces Learning Flexibility And Rewards Competency</td>
</tr>
<tr>
<td>Jones, Nadine Bryk</td>
<td>431</td>
<td>Teaching Interprofessional Communication As An Interprofessional Team</td>
</tr>
<tr>
<td>Jongadsayakul, Woradee</td>
<td>381</td>
<td>Arbitrage Opportunity In Thailand Futures Exchange: An Empirical Study Of SET50 Index Options</td>
</tr>
<tr>
<td>Kaur, Daljit</td>
<td>331</td>
<td>Strategies For Developing Positive Teacher-Student Relationships With Children Of Poverty</td>
</tr>
<tr>
<td>Kim, Byung Soo</td>
<td>208</td>
<td>Hydrogen Supply Network Model Using Multiple Transportations With An Associated Replenishment Cycle</td>
</tr>
<tr>
<td>Kim, Chai-hyeon</td>
<td>447</td>
<td>Contemporary Usage Of The Zero-Derivational Denomination Verbs</td>
</tr>
<tr>
<td>Kim, Eung-kyu</td>
<td>339</td>
<td>The Comparison Of The Effect Of Financial Ratios On EVA Between Chinese Listed Smes And Korean Listed Smes</td>
</tr>
<tr>
<td>Kim, Eunjin (Anna)</td>
<td>235</td>
<td>My Favorite Character Wore It: Influence Of Fictional Character Traits And Wishful Identification On Purchase Behaviors</td>
</tr>
<tr>
<td>Kim, Gun-woo</td>
<td>405</td>
<td>Building Battery Deterioration Prediction Model Using Real Field Data</td>
</tr>
<tr>
<td>Kim, Gyuri</td>
<td>524</td>
<td>Preliminary Study For Development And Validation Of A Authentic Scale</td>
</tr>
<tr>
<td>Kim, Jeeyoun</td>
<td>525</td>
<td>Analysis Of Selection Patterns Between Intertemporal Choice Depending On Gain And Loss Frame</td>
</tr>
<tr>
<td>Kim, Jiyeon</td>
<td>524</td>
<td>Preliminary Study For Development And Validation Of A Authentic Scale</td>
</tr>
<tr>
<td>Kim, Joo Woo</td>
<td>202</td>
<td>What Psychosocial Interventions Work For Players’ Aggression, Depression, And Loneliness? Effect Of Therapeutic Catharsis And Life And Game Self-Efficacy</td>
</tr>
<tr>
<td>Kim, Kyungil</td>
<td>524</td>
<td>Preliminary Study For Development And Validation Of A Authentic Scale</td>
</tr>
<tr>
<td>Kim, Kyungil</td>
<td>525</td>
<td>Analysis Of Selection Patterns Between Intertemporal Choice Depending On Gain And Loss Frame</td>
</tr>
<tr>
<td>Kim, Sun-jin</td>
<td>447</td>
<td>Contemporary Usage Of The Zero-Derivational Denomination Verbs</td>
</tr>
<tr>
<td>Kim, Youngil</td>
<td>524</td>
<td>Preliminary Study For Development And Validation Of A Authentic Scale</td>
</tr>
<tr>
<td>Kim, Youngil</td>
<td>525</td>
<td>Analysis Of Selection Patterns Between Intertemporal Choice Depending On Gain And Loss Frame</td>
</tr>
<tr>
<td>Name</td>
<td>Page</td>
<td>Title</td>
</tr>
<tr>
<td>------------------------</td>
<td>------</td>
<td>-------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Kim, Youngjun</td>
<td>522</td>
<td>A Relation Between Emo-Diversity And Cognitive Flexibility</td>
</tr>
<tr>
<td>Kim, Youngjun</td>
<td>523</td>
<td>The Motivational Aspects Of Autonomy On Decision Making</td>
</tr>
<tr>
<td>Kim, Youngjun</td>
<td>524</td>
<td>Preliminary Study For Development And Validation Of A Authentic Scale</td>
</tr>
<tr>
<td>Kim, Youngjun</td>
<td>525</td>
<td>Analysis Of Selection Patterns Between Intertemporal Choice Depending On Gain And Loss Frame</td>
</tr>
<tr>
<td>Klein, Eric</td>
<td>113</td>
<td>Use Of Multimedia Instruction In Online STEM Education</td>
</tr>
<tr>
<td>Koenig, Robert J.</td>
<td>133</td>
<td>Traditional, Online And Teleconference Delivery Modes Effectiveness: How They Correlate To Undergraduate Student's Ethnicity, Major And Academic Year Of Study</td>
</tr>
<tr>
<td>Kostouros, Patricia</td>
<td>198</td>
<td>Using A Dating Violence Prevention Project To Educate Social Work Students</td>
</tr>
<tr>
<td>Krzensk, Alex</td>
<td>506</td>
<td>Influencing Academic Resilience And Self-Regulation Skills In Students: What Is The Impact On Actual Results?</td>
</tr>
<tr>
<td>Ku, Dong Nyeon</td>
<td>202</td>
<td>What Psychosocial Interventions Work For Players’ Aggression, Depression, And Loneliness? Effect Of Therapeutic Catharsis And Life And Game Self-Efficacy</td>
</tr>
<tr>
<td>Kwon, Daeil</td>
<td>437</td>
<td>Advances And Challenges In Prognostics And Health Management: Need For Interdisciplinary Teaching And Learning</td>
</tr>
<tr>
<td>Lambani, Matodzi Nancy</td>
<td>521</td>
<td>Female English Student Teachers’ Views On Benefits Of Academic Group Work</td>
</tr>
<tr>
<td>Lee, Heungcheol</td>
<td>524</td>
<td>Preliminary Study For Development And Validation Of A Authentic Scale</td>
</tr>
<tr>
<td>Lee, Hye Rim</td>
<td>202</td>
<td>What Psychosocial Interventions Work For Players’ Aggression, Depression, And Loneliness? Effect Of Therapeutic Catharsis And Life And Game Self-Efficacy</td>
</tr>
<tr>
<td>Lee, Hyeonjeong</td>
<td>522</td>
<td>A Relation Between Emo-Diversity And Cognitive Flexibility</td>
</tr>
<tr>
<td>Lee, Jun-woo</td>
<td>337</td>
<td>Organizational Evolution Approach To HRM At The Populational Level Of Analysis</td>
</tr>
<tr>
<td>Lee, Juyeon</td>
<td>449</td>
<td>How Definiteness Is Interpreted From Korean To English And Spanish</td>
</tr>
<tr>
<td>Lee, Seok-han</td>
<td>447</td>
<td>Contemporary Usage Of The Zero-Derivational Denomination Verbs</td>
</tr>
<tr>
<td>Letkowski, Jerzy</td>
<td>192</td>
<td>Beyond Relational Databases</td>
</tr>
<tr>
<td>Li, Qi</td>
<td>238</td>
<td>The Effects Of Motivational Intervention On EFL Students’ Motivation</td>
</tr>
<tr>
<td>Li, Yunhe</td>
<td>439</td>
<td>Dynamic Adjustment of Board Structure: Evidence from Chinese Public Listed Companies</td>
</tr>
<tr>
<td>Lin, Yu-Tzu</td>
<td>538</td>
<td>Design And Implementation Of Interdisciplinary STEM Instruction- A Case Study Of Computational Physics</td>
</tr>
<tr>
<td>Lin, Yu-Tzu</td>
<td>540</td>
<td>Applying 3D Printing In A Living Technology Course To Foster Student's Creativity</td>
</tr>
<tr>
<td>Love, Paris</td>
<td>448</td>
<td>Drawing The Line: Keeping Colorism Out Of The Classroom</td>
</tr>
<tr>
<td>Lowe, Keith</td>
<td>177</td>
<td>One Century And Counting: An Examination Of The United States Estate Tax System</td>
</tr>
<tr>
<td>Lum, Lillie</td>
<td>459</td>
<td>English Language Education and Immigrant Integration in Canada</td>
</tr>
<tr>
<td>Lytle, Nicole</td>
<td>370</td>
<td>If You Can’t Beat ‘Em, Join ‘Em: Using Mobile Devices Effectively In And Out Of The Classroom</td>
</tr>
<tr>
<td>Maher, John J. &quot;Jack&quot;</td>
<td>128</td>
<td>Government Reporting Timeliness and Municipal Credit Market Implications</td>
</tr>
<tr>
<td>Malallah, Seham</td>
<td>313</td>
<td>A Case Study Of A Group Of KU Students Enrolled In An EFL Course Outlining The Difference Between The Traditional Method And The Project Based Learning Method</td>
</tr>
<tr>
<td>Manyfingers, Maurice</td>
<td>343</td>
<td>Educational School Leadership – An Indigenous Context</td>
</tr>
<tr>
<td>Author</td>
<td>Page</td>
<td>Title</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>------</td>
<td>-------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Margaritis, Chris</td>
<td>446</td>
<td>Enhancing Active Learning Through The Use Of Technology</td>
</tr>
<tr>
<td>Midcalf, Lisa</td>
<td>298</td>
<td>Traffic Light Writing: Creating Writers Of All Ages</td>
</tr>
<tr>
<td>Mihalic, Tanja</td>
<td>495</td>
<td>Responsible Tourism Higher Education: The Case Of EMTM</td>
</tr>
<tr>
<td>Molloy, Steve</td>
<td>116</td>
<td>Metaphors in Business — Implications When the Source is Misinterpreted</td>
</tr>
<tr>
<td>Morris, Elizabeth A.</td>
<td>302</td>
<td>Personalized Weekly Overviews: A Comparison Of Text And Video Notifications Measuring Student Engagement, Achievement And Misunderstanding In An Online Classroom</td>
</tr>
<tr>
<td>Nengome, Zachariah</td>
<td>521</td>
<td>Female English Student Teachers’ Views On Benefits Of Academic Group Work</td>
</tr>
<tr>
<td>Norwood, Kathryn</td>
<td>189</td>
<td>Automated Assessment: Developing A Community Of Collaboration</td>
</tr>
<tr>
<td>Norwood, Kathryn</td>
<td>190</td>
<td>E-Mentorship: Providing Support To Non-Traditional Learners</td>
</tr>
<tr>
<td>Oliver, Brent</td>
<td>229</td>
<td>Looking Inward: Exploring The Use Of Reflexive Photography In Social Work Field Education</td>
</tr>
<tr>
<td>Olsen, David H.</td>
<td>472</td>
<td>Increasing Individual Absorptive Capacity By Teaching Dynamic SQL</td>
</tr>
<tr>
<td>Pakdaman, Morteza</td>
<td>427</td>
<td>Exact And Approximate Solution Of A Two-Stock Inventory System With Forecasting Of Demand And Return Rates</td>
</tr>
<tr>
<td>Pallister, Kathryn</td>
<td>431</td>
<td>Teaching Interprofessional Communication As An Interprofessional Team</td>
</tr>
<tr>
<td>Palmer, Kristin</td>
<td>164</td>
<td>NetPromoter Scores as a Measure of Learner Satisfaction in Massive Open Online Courses (MOOCs)</td>
</tr>
<tr>
<td>Pao, Tammy</td>
<td>226</td>
<td>Nontraditional Student Risk Factors And Gender As Predictors Of Enrollment In College Distance Education</td>
</tr>
<tr>
<td>Park, Jun-Byung</td>
<td>341</td>
<td>A Theoretical And Case Study On The Entrepreneurial Corporate Spin-Off Venture In Daejeon Region</td>
</tr>
<tr>
<td>Park, Soyoung</td>
<td>449</td>
<td>How Definiteness Is Interpreted From Korean To English And Spanish</td>
</tr>
<tr>
<td>Peridore, Stephen</td>
<td>305</td>
<td>Best Practices For The Development And Teaching Of ESL Online Reading And Writing Courses</td>
</tr>
<tr>
<td>Persons, Obeua S.</td>
<td>142</td>
<td>Financial And Corporate Governance Characteristics Of FCPA Violators</td>
</tr>
<tr>
<td>Phillips, SueAnn</td>
<td>452</td>
<td>Breaking New Ground: A Service Learning Program For Urban Education Environments</td>
</tr>
<tr>
<td>Pooya, Alireza</td>
<td>427</td>
<td>Exact And Approximate Solution Of A Two-Stock Inventory System With Forecasting Of Demand And Return Rates</td>
</tr>
<tr>
<td>Potter, Gaylene L.</td>
<td>431</td>
<td>Teaching Interprofessional Communication As An Interprofessional Team</td>
</tr>
<tr>
<td>Pries, Fred</td>
<td>308</td>
<td>The Impact Of External Events On Corporate Risk Disclosures</td>
</tr>
<tr>
<td>Putulowski, Joe</td>
<td>258</td>
<td>Building Strong Faculty-Student Relationships: A Path To Lower Attrition Rates At Online Universities</td>
</tr>
<tr>
<td>Qian, Jingxi</td>
<td>326</td>
<td>What Will Trigger A Non-Buyer To Become A Buyer? An Investigation Of China’s Potential Luxury Goods Market</td>
</tr>
<tr>
<td>Ratner, Mitchell</td>
<td>362</td>
<td>Portfolio Effects Of VIX Index Investment</td>
</tr>
<tr>
<td>Raudebaugh, Candi</td>
<td>431</td>
<td>Teaching Interprofessional Communication As An Interprofessional Team</td>
</tr>
<tr>
<td>Rohanek, Lisa</td>
<td>446</td>
<td>Enhancing Active Learning Through The Use Of Technology</td>
</tr>
<tr>
<td>Author</td>
<td>Page</td>
<td>Title</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Scamaca, Leslie</td>
<td>370</td>
<td>If You Can’t Beat ‘Em, Join ‘Em: Using Mobile Devices Effectively In And Out Of The Classroom</td>
</tr>
<tr>
<td>Schleigh, Sharon P.</td>
<td>408</td>
<td>Surprising Insights From The Istar International Study Of Astronomy Education Research Database</td>
</tr>
<tr>
<td>Schleigh, Sharon P.</td>
<td>409</td>
<td>First Results From Administering The Exam Of GeoloGy Standards EGGS</td>
</tr>
<tr>
<td>Selhorst, Adam</td>
<td>113</td>
<td>Use Of Multimedia Instruction In Online STEM Education</td>
</tr>
<tr>
<td>Sharma, Manish</td>
<td>494</td>
<td>Post-Issues Excess Returns In Indian Stock Market</td>
</tr>
<tr>
<td>Shelley, Gina L.</td>
<td>452</td>
<td>Breaking New Ground: A Service Learning Program For Urban Education Environments</td>
</tr>
<tr>
<td>Shen, Dong</td>
<td>326</td>
<td>What Will Trigger A Non-Buyer To Become A Buyer? An Investigation Of China’s Potential Luxury Goods Market</td>
</tr>
<tr>
<td>Shepherd, Carol M.</td>
<td>505</td>
<td>Increasing Social Skills: Autistic Learners Interact With Robots</td>
</tr>
<tr>
<td>Shin, JaeMyoung</td>
<td>523</td>
<td>The Motivational Aspects Of Autonomy On Decision Making</td>
</tr>
<tr>
<td>Shin, Jiseong</td>
<td>460</td>
<td>When Leaders are Reluctant to Empower: A Theoretical Approach</td>
</tr>
<tr>
<td>Shoenberger, Heather</td>
<td>235</td>
<td>My Favorite Character Wore It: Influence Of Fictional Character Traits And Wishful Identification On Purchase Behaviors</td>
</tr>
<tr>
<td>Simnjavanovski, Riste</td>
<td>302</td>
<td>Personalized Weekly Overviews: A Comparison Of Text And Video Notifications Measuring Student Engagement, Achievement And Misunderstanding In An Online Classroom</td>
</tr>
<tr>
<td>Simon, Nicole</td>
<td>487</td>
<td>Iconic Representation As An Assessment Of Impact On Critical Thinking</td>
</tr>
<tr>
<td>Slater, Stephanie J. Turner</td>
<td>408</td>
<td>Surprising Insights From The Istar International Study Of Astronomy Education Research Database</td>
</tr>
<tr>
<td>Slater, Stephanie J. Turner</td>
<td>409</td>
<td>First Results From Administering The Exam Of GeoloGy Standards EGGS</td>
</tr>
<tr>
<td>Slater, Timothy F.</td>
<td>129</td>
<td>The Modern Professor’s New Toolkit for Interactive Teaching</td>
</tr>
<tr>
<td>Slater, Timothy F.</td>
<td>408</td>
<td>Surprising Insights From The Istar International Study Of Astronomy Education Research Database</td>
</tr>
<tr>
<td>Slater, Timothy F.</td>
<td>409</td>
<td>First Results From Administering The Exam Of GeoloGy Standards EGGS</td>
</tr>
<tr>
<td>Smith, Marshall</td>
<td>265</td>
<td>Quantifying Assessment Of Undergraduate Critical Thinking</td>
</tr>
<tr>
<td>Stegemann, Nicole</td>
<td>446</td>
<td>Enhancing Active Learning Through The Use Of Technology</td>
</tr>
<tr>
<td>Stewart, Kevin</td>
<td>448</td>
<td>Drawing The Line: Keeping Colorism Out Of The Classroom</td>
</tr>
<tr>
<td>Stoeckel, Pamella</td>
<td>227</td>
<td>A Model Of Client Education: A Framework To Teach</td>
</tr>
<tr>
<td>Sturz, Dominic</td>
<td>302</td>
<td>Personalized Weekly Overviews: A Comparison Of Text And Video Notifications Measuring Student Engagement, Achievement And Misunderstanding In An Online Classroom</td>
</tr>
<tr>
<td>Tadj, Lotfi</td>
<td>427</td>
<td>Exact And Approximate Solution Of A Two-Stock Inventory System With Forecasting Of Demand And Return Rates</td>
</tr>
<tr>
<td>Tatge, Coty B.</td>
<td>408</td>
<td>Surprising Insights From The Istar International Study Of Astronomy Education Research Database</td>
</tr>
<tr>
<td>Torres, Francesca</td>
<td>102</td>
<td>Academic Entitlement in Nontraditional Undergraduates</td>
</tr>
<tr>
<td>Tsai, Sheng-An</td>
<td>540</td>
<td>Applying 3D Printing In A Living Technology Course To Foster Student’s Creativity</td>
</tr>
<tr>
<td>Unruh, Nita</td>
<td>118</td>
<td>Keeping The Physical Educator “Connected” - An Examination Of Comfort Level, Usage And Professional Development Available For Technology Integration In The Curricular Area Of Physical Education</td>
</tr>
<tr>
<td>Valdez, Lindy</td>
<td>247</td>
<td>Common Factors Of The Best Elementary Schools In The United States</td>
</tr>
<tr>
<td>Author(s)</td>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>--------------------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>Valencia, Adrian</td>
<td>215</td>
<td></td>
</tr>
<tr>
<td>Verba, Emily</td>
<td>424</td>
<td></td>
</tr>
<tr>
<td>Volante, Louis</td>
<td>105</td>
<td></td>
</tr>
<tr>
<td>Volkan, Ara</td>
<td>215</td>
<td></td>
</tr>
<tr>
<td>Walker, Robyn</td>
<td>145</td>
<td></td>
</tr>
<tr>
<td>Wang, Ming-Tsan</td>
<td>538</td>
<td></td>
</tr>
<tr>
<td>Wang, Ming-Tsan</td>
<td>540</td>
<td></td>
</tr>
<tr>
<td>Ward, Brandi</td>
<td>431</td>
<td></td>
</tr>
<tr>
<td>Warthe, D. Gaye</td>
<td>197</td>
<td></td>
</tr>
<tr>
<td>Warthe, D. Gaye</td>
<td>198</td>
<td></td>
</tr>
<tr>
<td>Webb, Karen</td>
<td>446</td>
<td></td>
</tr>
<tr>
<td>Wen, Ge</td>
<td>236</td>
<td></td>
</tr>
<tr>
<td>Wen, Ge</td>
<td>238</td>
<td></td>
</tr>
<tr>
<td>Wilcox, Stephen E.</td>
<td>132</td>
<td></td>
</tr>
<tr>
<td>Worrell, Vicki</td>
<td>118</td>
<td></td>
</tr>
<tr>
<td>Wright, Thomas</td>
<td>162</td>
<td></td>
</tr>
<tr>
<td>Wu, Cheng-Chih</td>
<td>540</td>
<td></td>
</tr>
<tr>
<td>Wu, Cheng-Chih</td>
<td>538</td>
<td></td>
</tr>
<tr>
<td>Wu, Woody</td>
<td>114</td>
<td></td>
</tr>
<tr>
<td>Yasinski, Lee</td>
<td>244</td>
<td></td>
</tr>
<tr>
<td>Yoon, Tae-II</td>
<td>468</td>
<td></td>
</tr>
<tr>
<td>Zhang, Wei</td>
<td>509</td>
<td></td>
</tr>
<tr>
<td>Zhang, Xiaotian Tina</td>
<td>439</td>
<td></td>
</tr>
</tbody>
</table>

- Valencia, Adrian: Financial Consequences Of Recognizing Goodwill As A Contra-Equity Account
- Verba, Emily: Modes, Technology, And Collaboration
- Volante, Louis: Immigrant Student Achievement: Cross-Cultural Approaches To Educational Policy Reform
- Volkan, Ara: Financial Consequences Of Recognizing Goodwill As A Contra-Equity Account
- Walker, Robyn: The Future Of Leadership: Men, Women, And Leader Communication
- Wang, Ming-Tsan: Design And Implementation Of Interdisciplinary STEM Instruction- A Case Study Of Computational Physics
- Wang, Ming-Tsan: Applying 3D Printing In A Living Technology Course To Foster Student's Creativity
- Ward, Brandi: Teaching Interprofessional Communication As An Interprofessional Team
- Warthe, D. Gaye: Measuring Relationship Violence On A Post-Secondary Campus: Implications For Prevention
- Warthe, D. Gaye: Using A Dating Violence Prevention Project To Educate Social Work Students
- Webb, Karen: Enhancing Active Learning Through The Use Of Technology
- Wen, Ge: Investigation On Language Teachers’ Attitude And Behavior Toward Reflective Teaching
- Wen, Ge: The Effects Of Motivational Intervention On EFL Students’ Motivation
- Wilcox, Stephen E.: Shiller’s CAPE And The Determinants Of Justified P/E
- Worrell, Vicki: Keeping The Physical Educator “Connected” - An Examination Of Comfort Level, Usage And Professional Development Available For Technology Integration In The Curricular Area Of Physical Education
- Wright, Thomas: Lesson Study: Research On Combining And Sharing Content And Pedagogical Knowledge To Effectively Reach Students’ Unique Needs
- Wu, Cheng-Chih: Applying 3D Printing In A Living Technology Course To Foster Student's Creativity
- Wu, Cheng-Chih: Design And Implementation Of Interdisciplinary STEM Instruction- A Case Study Of Computational Physics
- Wu, Woody: Contextualized Learning And Teaching Study For The Microcomputer Applications Course In A 2-Year College
- Yasinski, Lee: A Competency-Based Technical Training Model That Embraces Learning Flexibility And Rewards Competency
- Yoon, Tae-II: Cultural Dimensions Of The Interplay Between Music Consumption And Well-Being
- Zhang, Wei: Training Teachers To Teach The Language Of Science
- Zhang, Xiaotian Tina: Dynamic Adjustment of Board Structure: Evidence from Chinese Public Listed Companies
Authors added after deadline:

<table>
<thead>
<tr>
<th>Author Name</th>
<th>Paper #</th>
<th>Title (Click title to view paper)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Academic Entitlement In Nontraditional Undergraduates
Stephanie Babb, Ph.D., University of Houston-Downtown, USA
Travis Crone, Ph.D., University of Houston-Downtown, USA
Francesca Torres, University of Houston-Downtown, USA
Ruth Johnson, Ph.D., University of Houston-Downtown, USA

ABSTRACT

Academic entitlement refers generally to a student’s expectations of a high grade without their having to actually meet the course requirements for that grade (Cain, Romanelli, & Smith, 2012). Academic entitlement is generally perceived as pervasive in college institutions, and high levels of academic entitlement are positively correlated with several negative consequences, such as academic dishonesty, lower GPAs, and unrealistic expectations about the workforce after graduation (van Wieirngen, Formicola, Peirone, & Falsetta, 2013). Although nontraditional students make up a significant (approximately 75%) proportion of the undergraduate student population, with that proportion is expected to increase (Choy, 2002; Wyatt, 2011), there is very little literature regarding academic entitlement in nontraditional college students. Ethnically diverse undergraduate participants (n=448) reported number of nontraditional factors, and completed two academic entitlement scales. It was expected that academic entitlement would be positively correlated with how nontraditional a student was; however, moderately and highly nontraditional students were actually less academically entitled when compared with minimally nontraditional and traditional students. There were no differences in entitlement with regards to ethnicity, but men showed higher levels of entitlement than women. This study significantly adds to the literature on nontraditional students, and will help in allowing us to understand how best to meet the needs of nontraditional students and improve academic success.
Author requested nothing in proceedings.
Author requested nothing in proceedings.
Use Of Multimedia Instruction In Online STEM Education
Dr. Adam L Selhorst, Ashford University, USA
Dr. Justin Harrison, Ashford University, USA
Dr. Eric Klein, Ashford University, USA

ABSTRACT

The use of multimedia “guidance” is becoming standard practice over written instruction in the online classroom. The use of written guidance has been the standard at most online universities since the founding of the online modality, however, the potential benefits of moving towards multimedia based instruction to replace the written guidance may have enormous benefits for students with a more hands on learning style. This study will examine the effects of replacing the traditional written guidance with multimedia instruction through the use of videos and partnerships with other technologically based vendors. We hypothesize that this exchange will lead to increases in student success, retention, and end of course survey (EoCS) scores.
Author requested nothing in proceedings.
Metaphors In Business — Implications When The Source Is Misinterpreted
Steve Molloy, Canisius College, USA

ABSTRACT

Metaphors are often used in business and economics. Comparisons are made between business and sports (“hitting a home run”) or business and war (Sun Tzu, The Art of War). One of the more common metaphors is made between business and biology — specifically Darwin and evolutionary theory. Darwinism is central to many of our current models of business strategy. Schumpeter’s notion of creative destruction argues that new, more efficient or effective, forms of businesses will destroy the old. Those firms that cannot compete will either evolve, developing new or stronger sources of competitive advantage, or they will die. Population ecology models in Organizational Theory look at organizations through a Darwinian lens. What happens when the basis for the metaphor, Darwin’s Theory of Evolution, is either misinterpreted or misapplied. Darwin never made reference to “survival of the fittest” and even the popular understanding of this expression is a misreading of evolutionary theory. ‘Survival of the fittest’ is often incorrectly interpreted as survival of the largest or strongest.

A recent, and controversial, article in Biology Letters argues that Darwin had it wrong — at least with respect to new, unoccupied, ecological spaces. “Animals diversified by expanding into empty ecological roles rather than by direct competition with each other.” The example given is the evolution of birds and the ability of flight. The argument is that the ‘motivation’ to evolve was not to escape intense competition on the ground. Rather, the motivation was to take advantage of the even greater opportunities available in the unoccupied spaces in the tops of the trees. This alternate view has interesting implications for Business Strategy.

This paper will examine the Darwinian model to determine if the ‘correct’ interpretation of the theory still provides a valid basis as a metaphor for business. We have seen the impact on markets when firms such as Walmart enter and the traditional Darwinian model seems to hold. However, does the new model better explain innovative companies that create entirely new markets, such as Facebook and the creation of the social networking market? Are incremental changes in technologies and business models best explained by the ‘old’ Darwinian model, while entirely new and disruptive technologies are best explained by the new Darwinian model? This paper will discuss the traditional Darwinian model and its applicability to our understanding of strategy and economics. The paper will also examine the more recent findings in biology to determine their validity as a metaphor to explain current developments of entirely new and disruptive markets.
Keeping The Physical Educator “Connected”: An Examination Of Comfort Level, Usage And Professional Development Available For Technology Integration In The Curricular Area Of Physical Education

Authors: Megan Adkins, PhD, University of Nebraska- Kearney
Matthew R. Bice, PhD, University of Nebraska- Kearney
Vicki Worrell, PhD, Emporia State University
Nita Unruh, PhD., University of Nebraska- Kearney

ABSTRACT

Schools continue to integrate the use of technology, and gymnasiums are not an exception. The purpose of the study was to determine the comfort level of Physical Education teachers integrating technology in the gymnasium, determine types of professional development provided for technology use, and potential barriers associated with technology usage. A survey of 179 practicing Physical Education teachers located in the Midwest completed an online questionnaire. Results indicated Physical Education teachers were comfortable integrating technology but reported inadequate professional development on technology device implementation. These findings suggest Physical Educators are willing to integrate technology but the professional development and resources available to successfully accomplish this is lacking. Future research should examine PETE program offerings, and additional PD opportunities offered by SHAPE America within the area of technology and Physical Education.

INTRODUCTION

Children in the United States today are fundamentally different in the way they think, access, interpret, process, interact, and communicate. One potential integral influence is due to digital technologies available to youth. Changes in children and advancement in technology design have drastically altered the educational environment. The United States Department of Education federal program Enhancing Education Through Technology (EETT), supports improving student academic achievements through the use of educational technology (U.S. Department of Education, 2009). As a result, schools across the U.S. request teachers to complete professional development, which has shown to help teachers learn new information and skills to enhance teacher understanding of how to integrate technology in their classrooms to increase student learning (Zemelman, Daniels, & Hyde, 1998; Snyder, Tan, & Hoffman, 2005; Kulinna, McCaughtry, Martin, Cothran, & Faust, 2008; Martin, McCaughtry, Kulinna, Cothran, & Faust, 2008).

Opportunities to engage students with technologies are not limited in classrooms but can expand to various areas within the constraints of the school environment. With advancements in mobile technology, Physical Education courses have become a curricular area that students have been given the opportunity to utilize digital components in a physically active atmosphere. The Society of Health and Physical Educators of America (SHAPE America) currently provide numerous position statements addressing appropriate practices of technology use in Physical Education settings. Subsequently numerous articles have been published describing technologies available, appropriate practice,
and strategies that should be used to implement technology successfully into Physical Education (NASPE, 2009; Lee, 2007; NASPE 2004; NASPE 2007; NASPE 2009a).

Although information is available to Physical Educators on the use and strategies in regards to technology, school and district professional development opportunities offered for all teachers in the building many times like relevance for the Physical Educator to transfer the knowledge gained and utilize it in the gymnasium simply because a classroom with desks, is taught in a very different way then students in a gymnasium. The purpose of this article was to determine comfort level of using and integrating technology of Physical Education teachers, barriers to enhancing technology advances in the gymnasium, and to determine resources used to receive the professional development needed for Physical Educators to become competent in the integration in their classrooms, as well as determine the Physical Educators preferred means to receive the professional development.

METHODS

Study participate were offered, via email, solicitation to participate in the study if they were members of the Central District Society of Health and Physical Educators (CDSHAPE). Participants eligible to participate in the study included teachers from NE, IA, SD, ND, KS, WY, CO who had taught at least one year, and the majority (51%) of their teaching time was within the area of Physical Education. (n= 2, 212). The research team was granted access to send the survey through CDSHAPE email through the Institutional Review Board by the participating university and by receiving approval from CDSHAPE. Quantitative data were collected using a questionnaire administered through Qualtrics, an online questionnaire system housed by the university. Participants were emailed the research study cover letter, a description of the purpose of the study, and a link to the questionnaire. Participants were informed that participation was voluntary and they could withdraw from the study at any time. The Institutional Review Board approved all procedures, before data collection began. All CDSHAPE members were provided a follow up reminder to participate in the study two weeks after the initial email was sent out.

Survey

Questions developed for the survey were aligned with the National Education Technology for Teacher (NET-T) standards, and related to the SHAPE America position statement on technology. Professors from two Universities with degrees in Physical Education, Sport Administration, and Instructional Technology reviewed the instrument and evaluated the content, construct, and flow. CDAHPERD and the SHAPE America reviewed the content of the questions and the researchers made revisions per the association request. The Qualtrics survey consisted of layers of questions developed to ask queries pertaining to the Physical Educators response to survey question number one that stated, “Do you use any form of technology for instructional purposes in your Physical Education classroom?” If the responder selected “no,” then the Physical Education teacher was directed to answer questions regarding a) why they were not using technology, b) type of professional development training they would prefer in regards to technology, c) thoughts on the potential for technology in the physical education classroom, and d) demographic information. If the responder answered, “yes” to the initial question, the Physical Educator responded to questions relating to their a) comfort and preparation level in using technology in the classroom, b) proficiency level in a using a variety of technologies, c) technology equipment being used and mobile tablet apps, d) use of online technology, e) type of professional development training they would prefer in regards to technology, f) thoughts on the potential for technology in the physical education classroom, and g) demographic information. A 5-point Likert style scale [strongly agree (SA), agree (A), neutral (N), disagree (D), strongly disagree (SD)] was used to analyze the participant’s survey responses whether the participant answered the first question “yes,” or “no”. Following data collection, survey responses were uploaded and analyzed in SPSS, Version 20.

DATA ANALYSIS AND RESULTS

Descriptive statistics concerning demographics included gender of participant, teaching experience (years taught) and grade level taught from the previous year. Frequency and percentages were analyzed for demographic data by gender (male/female), school level (elementary, middle, high school), teaching experience (1-5, 6-10, 11-15, 16+ years), and size of school (by number of students: less than 200, 201-500, 501-800, 801-1100, 1101+). Variables analyzed
included: comfort level integrating technology, technology barriers, professional development available, and how the teacher preferred to receive the professional development. All components other than demographic questions were analyzed on a 5-point Likert style scale [strongly agree (SA), agree (A), neutral (N), disagree (D), strongly disagree (SD)]. The statistical analysis used to determine these outcomes were empirical sound descriptive notations, relationship correlations, and T-Tests. Significant alpha level was established at 0.05.

A total of 179 teachers participated in the current study; 70.3%(n= 128) female and 29.7%(n= 54) male. Teachers represented elementary schools (K – 5) 57% (n = 92), middle schools (6th – 8th grade) 18% (n = 29), and secondary schools (9th – 12th grade) 25% (n = 40). Physical Educators who taught 51% or more of their teaching in Physical Education ranged in years of experience; 1-5 years 10.1% (n=18), 6-10 years 10.6% (n=19), 11-15 years 13.4% (n=24), and 16 or more years 65.9% (n=118).

Data collected indicated a result that Physical Education teachers felt comfortable with technology use in their classroom; 87.7% reported to agree that they felt comfortable integrating technology in existing student activities and 80% agreed that they were comfortable with the knowledge base of how to use the technology that was available at their school (See Table 1). However, over 45% reported that they had not received adequate professional development on technology devices and usage. Teachers with 16+ years of experience reported to have the most difficulty in integration and technology knowledge represented by higher discomfort levels compared to teachers with less experience. Furthermore, Physical Education teachers with 6-10 years of experience noted higher discomfort levels concerning the lack of professional development and adequate resources for technology use (See Table 2).

### Table 1 Teacher Comfort Level with Technology Use in Classroom

<table>
<thead>
<tr>
<th>Comfort</th>
<th>Strongly Agree n (%)</th>
<th>Agree n (%)</th>
<th>Disagree n (%)</th>
<th>Strongly Disagree n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integration</td>
<td>58 (31)</td>
<td>106 (56)</td>
<td>22 (11.8)</td>
<td>1 (0.5)</td>
</tr>
<tr>
<td>Tech knowledge</td>
<td>40 (21.5)</td>
<td>109 (58)</td>
<td>37 (19.9)</td>
<td>-</td>
</tr>
<tr>
<td>Professional training</td>
<td>25 (13.4)</td>
<td>73 (39)</td>
<td>77 (41.4)</td>
<td>11 (5.9)</td>
</tr>
<tr>
<td>Resources</td>
<td>26 (14)</td>
<td>93 (50)</td>
<td>56 (30.1)</td>
<td>11 (5.9)</td>
</tr>
</tbody>
</table>

### Table 2 Physical Education Teacher Comfort Level and Preparedness to utilize technology

<table>
<thead>
<tr>
<th>Experience</th>
<th>Combined M (SD)</th>
<th>1-5 yrs. M (SD)</th>
<th>6-10 yrs. M (SD)</th>
<th>11-15 yrs. M (SD)</th>
<th>16+ yrs. M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comfort</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integration</td>
<td>1.82 ± 0.66</td>
<td>1.71 ± 0.61</td>
<td>1.63 ± 0.62</td>
<td>1.63 ± 0.68</td>
<td>1.89 ± 0.67</td>
</tr>
<tr>
<td>Knowledge</td>
<td>1.98 ± 0.66</td>
<td>1.79 ± 0.58</td>
<td>1.88 ± 0.72</td>
<td>2.00 ± 0.67</td>
<td>2.01 ± 0.68</td>
</tr>
<tr>
<td>Preparedness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional development</td>
<td>2.40 ± 0.83</td>
<td>2.29 ± 0.83</td>
<td>2.56 ± 0.83</td>
<td>2.21 ± 0.71</td>
<td>2.44 ± 0.84</td>
</tr>
<tr>
<td>Resources</td>
<td>2.28 ± 0.81</td>
<td>2.21 ± 0.89</td>
<td>2.50 ± 0.82</td>
<td>2.05 ± 0.71</td>
<td>2.28 ± 0.79</td>
</tr>
</tbody>
</table>

Physical Education teachers reported classrooms with technology motivated students, aids student learning by providing visual feedback, and tutorials, assists in providing a more efficient classrooms, and increases moderate to vigorous physical activity time. As many teachers agreed that technology was a necessity, barriers were present. The most noted barriers for technology integration within the classroom included funding (41.02%), resources (20.51%), not interested in technology (12.82%), other-set up time limited, laggard, etc. (17.54%). To follow this question the researchers asked the entire survey population what would be the most preferred means to deliver professional development about the use of technology in the field; the most preferred means was by face-to face workshops (58.95%), followed by webinars (32.5%).

© Copyright by author(s) 118-3 The Clute Institute
DISCUSSION

Technology can be implemented in a number of areas to assist teachers within Physical Education: unit and lesson plan preparation; classroom management; communication with parents and students; instruction and feedback; and assessment. Technology can also enhance student learning, and be a motivator for students. If the teacher does not feel comfortable or has limited access to learn about the use or new technologies because of few professional development opportunities, or lack of funding schools need to address this issue.

The U.S. Congress passed the Every Student Succeeds Act (ESSA) in December 2015, reauthorizing the Elementary and Secondary Education Act. This bipartisan legislation replaces No Child Left Behind as the federal education legislation that funds and provides the framework for elementary and secondary education in the United States. Physical Education has been included in ESSA as part of a student’s “well-rounded” education. As a result, states and school districts will have access to significantly more funds to help Physical Education programs with the purchasing of technology equipment and additional relevant professional development experiences.

Resources for Physical Education teachers are becoming more prevalent through SHAPE America resources and technology based Physical Education webinars/conferences developed by practicing Physical Education teachers with a passion for technology. Although these are available Physical Educators surveyed preferred online, face-to-face professional development. This suggests that a series of trainings or blended training would best serve physical education teachers to help defer costs but also have the personal feeling teachers are looking for. A face-to-face meeting could potentially be a great option for first time technology users followed by webinars or online courses as supplemental training.

With the onset of mobile tablet devices, smart phones, and wearable technologies readily available on the market, Physical Education classes not only have the potential to provide an avenue for students to be physically active, improve motor skill and fitness levels, as well as, social development, but also can utilize technology to enhance the healthy lifestyle experience for the student in physical education classes and hopefully also for a lifetime.

LIMITATIONS AND FUTURE RESEARCH

Limiting factors for this study were population size, time of year the survey was emailed to prospective participants, and participant responses feeling the need to be socially desirable, rather than truthful. Surveys were emailed to members of Central District SHAPE only, limiting the demographic region of teacher responses. Surveys were emailed during the school day during the first semester, which may have potentially limited sample size. Lastly, socially desirable responses, such as the tendency not to report low levels of technology use, are a potential limitation of this study. Future research should examine the technology preparation courses Physical Education Teacher Education (PETE) Universities and Colleges are currently requiring/offering for Physical Education majors to develop to teach students about the technologically integrated classroom. Additional research should also collect and analyze current professional development opportunities offered at the national, district, and state level for Physical Educators and determine cost, relevance, and population of teachers participating in these events via online and/or face-to-face.

CONCLUSION

Technology is constantly changing and evolving, continued training at the school, district, state, and national level is valuable to technology implementation for teachers of all ages and experience but need to be more relevant to the curriculum area. According to Zemelman, Daniels, & Hyde (1998), when teachers become more competent with the technology available, then their effectiveness is increased, and thus yields enhanced student learning. Despite the roadblocks, a partnership of technology and Physical Education is workable and beneficial for all involved. Frustrated by early failures with technology, many physical educators may give up or under-utilize technology just to say they are using it. The ability to understand technology may appear to some a natural-born trait; however, just like the acquisition of any skill-related endeavor in Physical Education, time on task makes the difference thus specific, related professional development could be a main factor in implementation for the teachers. Once the Physical Educator invests the time and effort to learn technology, teachers who use it for unit and lesson plan preparation, classroom
management, communication with parents and students, instruction and feedback, and assessment can save enormous amounts of time and energy helping schools gain teachers who conduct quality Physical Education classes.

REFERENCES


Government Reporting Timeliness And Municipal Credit Market Implications

Trent S. Henke, Virginia Tech, USA
John J. Maher, Virginia Tech, USA
John F. Carroll, Jr. Professor, Virginia Tech, USA

ABSTRACT

Publicly traded companies in the United States are required to file audited financial statements with the SEC following a prescribed timetable or experience federal penalties along with potential negative equity and debt capital market consequences. Individual municipal governments, such as cities and counties within the USA, have no similar obligation to file their financial statements within a specific period of time with any centralized regulatory entity. Indeed, if any filing requirements exist at all, these are usually only at the state level for municipalities and typically possess very lenient time requirements. Consequently, there is characteristically little regulatory incentive for governments to complete audited financial statements in a timely manner. Private-sector companies subject to SEC rules must file financial statements within 60 to 90 days after their fiscal year-end (depending on size of the firm). The Governmental Accounting Standards Board (GASB) indicates the average reporting time for large governmental entities is more than six months after their fiscal year-end with smaller entities averaging an even longer delay of eight months (Mead 2011). Although the GASB considers timeliness to be an important characteristic of effective information, it lacks the authority to impose mandatory reporting requirements. Our research investigates whether the timeliness of government financial statement reporting has measurable consequences for a municipality’s cost of funding operations through debt capital. This matter is particularly important considering the $3.7 trillion dollar municipal bond market (SIFMA 2015) which is comprised of over 44,000 state and local issuers (SEC 2012). Specifically, we examine the effects of financial reporting timeliness on a municipality’s assigned bond rating as well as the effects on its ultimate bond yield upon issuance of its debt.

The lack of timeliness of governmental reporting has been identified as one of the most frequent concerns expressed by users of governmental financial statements (Mead 2011). Moreover, the SEC has stated in public testimony to the US Senate subcommittee on Financial Services and General Government that purchasers of municipal securities should “have access to improved quality, quantity, and timeliness of information.” (Schapiro 2009). Our purpose in this paper is to explore the timeliness issue and its effects on municipal borrowing. Although there is a lack of direct centralized oversight requiring timely governmental reporting, we posit that there is likely to exist real costs to the residents of cities and municipalities whose government bodies are lax in the timeliness of their financial reporting.

Our rationale for conducting this investigation is that municipal reporting timeliness is an issue in the governmental sector. Research conducted in the corporate arena affords beneficial insights in developing our expectations and analyses when examining municipal governments. For example, research indicates both debt market and equity market benefits for publicly traded companies who are more transparent in their financial statements and communications with various stakeholders. Specifically, research finds greater transparency is associated with higher firm value. A second applicable literature stream relates to research investigating corporate earnings quality and indicates higher quality provides positive capital market benefits such as lower cost of capital. A third and final thread of germane research explores the effects of corporate governance and suggests firms that possess stronger governance are generally recognized and rewarded in the capital markets with lower debt financing costs and higher firm value.

1 Commodity and Security Exchanges 17 C.F.R. §249.310 requires that Form 10-K be filed in 60 days for large accelerated filers, 75 days for accelerated filers, and 90 days for all other registrants.
2 Representative investigations include Botosan and Plumlee, (2002); Leone et al., (2007); Beyer et al. (2010); Barth et al. (2013)
3 Illustrative studies include Affleck-Graves et al. (2002); Francis et al. (2004); Francis et al. (2005); Graham et al. (2008).
4 For example, Anderson et al. (2004).
While traditional equity market metrics related to the three areas of transparency, earnings quality, and corporate governance may not be directly translatable to municipal governments, we propose that investors are likely to utilize other available information correlated with these characteristics to help provide beneficial insight. We suggest government entities which make required financial statements public in a more timely fashion are likely to possess a more developed and refined accounting system which can help increase a municipality’s transparency and should provide more reliable information to its stakeholders. This finer quality reporting system might also be interpreted as a signal of stronger municipal governance and/or a superior management team. Benefits related to these positive attributes can result in establishing a higher degree of confidence amongst stakeholders which could be revealed through a higher bond rating and lower cost of debt.

Existing research is limited with respect to empirically addressing the timeliness of government financial reporting possibly because of the extensive hand collection of data buried within government annual financial reports. Despite this constraint, some basic research exists indicating government timeliness in financial reporting has seriously deteriorated over time. Prior research has not attempted to monetize the cost which lagged reporting imposes upon governments despite the implied value timeliness provides for users of government financial reports (Mead 2011). We explore these costs by examining what influence the timeliness of government reporting has on determining a municipality’s bond rating and also the ultimate effects it has on a government’s cost of debt.

Our results indicate a significant negative association between the bond rating the government entity is assigned by bond rating analysts and the number of days it takes for a municipality to file its financial statements after the close of its fiscal year. Furthermore, we find a significant positive association between the number of days it takes to file its financial reports and a municipality’s bond yield. Additional analyses indicate the most severe adverse consequences related to both bond ratings and bond yields exist for those governments who fall in the most delayed reporting time quintile. Our results are consistent with the interpretation that reporting delays increase the cost of issuing municipal securities. Subsequently, a pattern of extended delays is likely to result in an increased tax burden for taxpayers of slow reporting municipalities compared to those with more streamlined and efficient reporting processes. Our research investigates this process and quantifies the negative results for slow reporting municipalities. We contribute most directly to the existing literature related to government financial reporting and also the literature regarding the determinants of municipal bond ratings and yields.

---

5 Research by Dwyer and Wilson (1989), McLelland and Giroux (2000), and Mead (2011) indicate a deterioration from 100 days in the 1980’s to more than 175 days in the new millennium.
Shiller’s CAPE And The Determinants Of Justified P/E

Stephen E. Wilcox, Ph.D., CFA, Minnesota State University, USA

ABSTRACT

One measure of market valuation that has become widely popular is the CAPE, the cyclically-adjusted price-earnings ratio developed by Nobel laureate Robert Shiller. Many analysts contend that the CAPE should be considered a mean-reverting series and that its current value indicates that future U.S. equity returns will be much lower than what they have been in the past. However, the CAPE, like any other price-earnings (P/E) ratio, should be considered sensitive to the fundamental determinants of justified P/E. These determinants include the dividend payout ratio, the risk-free rate, the equity risk premium, and the growth in earnings per share. This research shows how the CAPE has varied with changes in these fundamental determinants. It also shows that the current values for these determinants is supportive of a higher CAPE and the outlook for future U.S. equity returns is not as bleak as some analysts suggest.
Traditional, Online And Teleconference Delivery Modes Effectiveness: How They Correlate To Undergraduate Student's Ethnicity, Major And Academic Year Of Study
Robert J. Koenig, Ed.D., NYIT Global Center for Hospitality Management, USA

ABSTRACT

Undergraduate students in higher education can and do take courses delivered in a variety of ways; traditional classroom, online and teleconference (video conference). But, to date, little research has been done on the demographic characteristics of students related to their preferences for one undergraduate course delivery mode over another.

This study sought to fill that void by comparing the effectiveness of three undergraduate course delivery modes: classroom, online, and video conference at a technical institute in a mid-Atlantic state. Students (N = 1,206) completed questionnaires on effectiveness, in terms of satisfaction for each delivery mode and on demographic characteristics. The questionnaire response rate was 74% for students.

In summary, in terms of the relationship between demographic characteristics of students and preference for the three delivery modes, significant differences were found on most characteristics tested. Only gender and race/ethnicity showed no significant relationships to choice of delivery mode. The other factors, age, year in school and full-time status, were significantly related in some way to delivery mode.

The results of this research should assist leaders in higher education to understand the benefits associated with different undergraduate course delivery modes.

---

1 Please note, this paper and presentation is part of a larger research study where some aspects of the study have been previously published.
Lab Work As An Everyday Assessment Tool

Prof. Dr. David-Samuel Di Fuccia, University of Kassel, Germany

ABSTRACT

The variability of teaching methods in school chemistry education increased considerably in the last years, aiming at developing cognitive skills of higher order like decision-making rather than making students memorize chemical facts. In spite of this the assessment tools used remain mostly the same: paper and pencil tests which often focus on encyclopaedic chemical knowledge. Thus there is a gap between the quality of teaching and the ways of testing. It therefore seems feasible to develop new assessment tools that focus on broader fields of competence. Lab activities offer possibilities for learning in important fields of competence and are of great importance in school chemistry teaching. The integration of typical, complex procedures of science such as finding an hypothesis, planning and conducting an experiment and interpreting data is the reason for promotion inquiry-based learning in science and should be an argument for using lab-work as assessment-instrument, too. Therefore it is interesting how lab activities can be used as assessment-instrument in everyday chemistry lessons and which effects such a use will have.

To answer these questions teachers and chemistry educators collaboratively developed and tested different ways to use students’ lab work as assessment-instrument. A number of useful approaches, such as different types of modified experimental instructions, arose, that can easily be created based on existing teaching material. The ways, in which teachers can produce these instruments were collected, described and published nationally and internationally. Experiences with such assessment-instruments show that they provide teacher with important additional information and change the attitude of students and teachers towards experimenting.

Keywords: Lab Work, Diagnosis, Assessment, Action Research, Inquiry Based Learning

1. THEORETICAL BACKGROUND

a. Reasons for Using Lab-Work as an Assessment Instrument

Looking at the development of school chemistry education in the last years, one can see that the content of chemistry curricula changed considerably. In the course of PISA (OECD, 1999), “scientific literacy” step by step became the main aim of the school chemistry courses. Concepts like “Chemie im Kontext” (Parchmann, Gräsel, Baer, Nentwig, Demuth & Ralle, 2006), “Science in the 21st century” (Science Education Group University of York and Nuffield Curriculum Centre, 2006), or Salters (Pilling, Holman & Waddington, 2001) try to show students that chemistry is important for their everyday life and for the development of the society as a whole. Those curricula aim at developing cognitive skills of higher order, like decision-making and reflecting rather than making the students memorize chemical facts (Zoller, 1996). Using student-centred approaches as well as following a more context-oriented curriculum means that teaching methods as well as the way of doing lab work will have to change, too (Di Fuccia et al., 2012). Literature indicates that chemistry teaching is on its way here and provides a wide range of suggestions (Eilks, 2005). To use these new teaching methods and inquiry based approaches to lab work in an effective way, the constructivist theory of learning (Bodner, 1986) shows that it is necessary to know as much as possible about the pre-knowledge, the special interests and the individual problems of every student in order to offer a teaching environment optimally fitting to the needs of the students. That means that a more diagnosis-oriented assessment of the students is a precondition for successfully reaching the aim of modern chemistry teaching.

In spite of these changes and necessities, most tools for assessment used in schools today seem to remain more or less the same as before: paper-and-pencil tests, which often focus on encyclopaedic chemical knowledge. Currently, there seems to be a gap between the quality of teaching and the testing methods of what has been taught. It therefore seems necessary to develop new assessment tools that focus on diagnosis (Zoller, 2001).
b. Lab-work as an Assessment Instrument

Strong reasons for rethinking the assessment of lab-activities come from both experience and research evidence on the practice of lab-work activities in science lessons. Although there are several critical remarks on the practice of conducting experiments in every day lessons so far (Hofstein, 2004; Lunetta, Hofstein & Clough, 2007), it is consensus that experiments play a central part and provide an essential path for introducing scientific thinking. They integrate many of the above mentioned competencies and therefore seem to be predestinated for being used as in the context of a diagnosis-oriented assessment. Therefore, it is consequent to use student’s lab work as an assessment tool. This follows the conclusion of Hofstein and Lunetta (Hofstein & Lunetta, 2004), who asked for further research on the development of assessment techniques in connection with students’ lab-work.

That is why we focused on evaluating feasible and useful ways of using lab-work activities as diagnosis-oriented tools for assessment, trying to find out the potential of this approach.

2. RESEARCH QUESTIONS

Consequently, we posed the following research questions:

1. How can practical activities be used as diagnosis-oriented instruments for assessment, that consider broader fields of competence?
2. What are further effects of using practical activities for diagnosis-oriented assessment purposes?

3. METHODOLOGY

The instruments, which were to be implemented, should be diversified and, therefore, in context of diagnosis, an adequate ground for counselling and further use in the everyday tuition, but without posing an additional burden for the teachers. For this reason, it seemed suitable, while developing ways in which diagnosis and assessment of performance based on classroom experiments could be possible, to seek close cooperation with the teaching staff. The methodology of a participatory action research work (Eilks & Ralle, 2002) chosen for this project attempted this. In this setting, teachers and researchers are working together on the same level on a project which is important for both of them. Special emphasis is put on the experiences the teachers made with the developed instruments. Teachers will ensure best and they are able to adequately judge the usefulness and applicability of ways of assessment based on their point of view. In this project, six teachers and 130 students aged 12 to 18 from two parts of Germany (Bavaria and North Rhine Westphalia) and two different school types (grammar schools and intermediate schools) took part. The participatory action research work was accompanied by a pre/post-questionnaire study asking for pros and cons of a diagnosis-oriented assessment by lab-work as well as for changes in the teachers’ and students’ attitudes and behaviour towards lab-work. After the project ended some of the teachers involved were interviewed. The results of this accompanying study were used to validate the experiences reported by the teachers. Every instrument developed in the research group was tested in school and optimized based on the experiences made several times during the two years course of the project.

4. INSTRUMENTS USED: DEVELOPMENTS AND EXPERIENCES

a. The Introspection-sheet

Based on preliminary theoretical consideration and in addition to the data aiming for immediate assessment, an instrument was to be applied to direct the students’ attention to their own learning process and their own behaviour. On the one hand, this was done to meet the student’s demands for an improved way of self-evaluation, as it is clarified later, and, on the other hand, for the sensible area of social competencies, which seemed to ask for such an instrument.

The introspection sheet “Message To Myself” was used for this purpose. It is a well known approach in literature (Bohl, 2001) and is presented in Figure 1. It asks for a short written statement justifying the classification on the scale along with the self-evaluation on a four-stage rating-scale. The sheet was distributed to the learning groups with the comment that the students were supposed to fill out the form by themselves several times, and that the teacher would,
after the adaptation phase, compare the data from the sheets with his own observation. The goal of this exercise was to enable the teacher to give advice concerning an improvement of the attitude towards work, or the attitude in general, and, after that, to use the collected data as a means for a diagnosis-oriented assessment.

The way in which the sheet was used differed between the different learning groups: In some of them, the criteria, which were to be observed, were set identically for all students, while, in other learning groups, the students were able to choose a criterion of their own choice. Even though the students were informed about the aims of the research project before the sheet was used, they tended to choose, in those cases when they were able to pick a criterion themselves, solely the criterion of “has the experiment been successful?” which lead to a bipolar way of marking and a similarly short written comment, such as, the “experiment was successful“ or “it did not work.“ On the one hand having chosen this criterion gave the teacher a first insight into what those students thought is important when doing lab work. On the other hand, this kind of feedback was not adequately suited to focus the student’s attention on the process of experimenting, and also on the versatile interdependence of classroom experiments with different competencies. Last but not least this choice of criterion and the answers resulting didn’t provide the teachers sufficient diagnostic information. As a result those students, like all other students, were given a criterion for their self-evaluation when the instrument was used for the second time.

The criteria concerning self-evaluation, which were consulted this way, were mainly derived from three categories: One type dealt with questions concerning the conduction of the experiments. The next dealt with the connection of experiments and the previous lessons. And the last, which was the smallest part, consisted of questions concerning aspects of social competence. Thus, one could find criteria of self-evaluation such as, “I want to successfully conduct my experiments and understand them,” “I want to put in extra effort in order to conduct the experiment correctly,” “I want to understand the concepts of the lesson with the help of the classroom experiments,” and “I want to be able to work more autonomously.” With the use of the introspection sheet the following results were found: The self-evaluation of the conduction of the experiment is readily expressed, and teachers told us, that they see this as helpful for the course of the experiments itself, as well as concerning the value of it as an additional source of information. An obvious trend could be observed, which showed that many students wanted to report, under the criterion of the conduction of the experiment, about the outcome of the experiment. This lead to the response that an experiment, which had gone “wrong“ often had a negative effect on the student’s self-evaluation of the conduction of the experiment, without any comments why the experiment, in the eye of the students, had “failed”, or if there were any mistakes responsible for what the students felt to be a failure. This indicates a clear focus on the outcome of student’s experiments, which was already observed by Demuth (Demuth, 1981), and which pales all other aspects of classroom experiments in comparison to it. With the help of the introspection-sheets concerning the criteria of conducting an experiment, it became obvious, which students cling to such a way of thinking and which students are already able to separate these aspects. This is, for the teachers, a diagnostically relevant aspect of knowledge, since they gain an insight to which extent students view classroom experiments as a scientific method of gaining knowledge and not as a “test of effort and skills.“
The sheets concerning the connection of lesson and experiments were only partly a success since the students often only reported, “yes, I saw a connection” or “no, I did not see any connections.” For the first case, almost none of them reported what the connection, which they saw, actually was. In the second case, they almost never mentioned at what point they lost track of the connection. However, it has to be considered as very positive, that the degree, in which they thought they would see a connection of lesson and experiment, was accurately reported on the rating-scale that was offered to them. This way, it did have a positive outcome for the teachers, since they were informed of the degree of comprehension of the students, even though without gaining additional information relevant for diagnosis. At this point, to gain additional feedback in the desired form, the sheet was optimized by not asking for general reasons for the students’ rating, but more specifically for the connection of lesson and experiment, for example, with the help of the following task: “Which question do you want to solve with the help of the experiment?” For the sheets concerning the social competences, it could be noted that those were completed eagerly and sophisticatedly, as far as the criterion was concerning the student him- or herself. As soon as the whole group was taken in consideration (e.g., “we performed well as a team”), the feedback became significantly more superficial.

b. Collectively Constructed Introspection-Sheets

Before starting a diagnosis-oriented assessment by using classroom experiments, the criteria of evaluation were supposed to be mentioned, explained and if requested by the students, further discussed within the means of communicative validation (Altrichter, Posch & Somekh, 1993) in all learning groups involved in the project. This was practiced as planned and mentioned above in almost all of the learning groups. In two of the learning groups however, an even further-reaching procedure could be tested. Here, the students were asked to name criteria for presentations as well as for their own work while conducting experiments themselves, which they thought to be suited for the aspect of diagnosis-oriented assessment. According to the supervising teachers, it could be observed that criteria concerning presentations were easier to be named by the students than those for successful experimental work in terms of this project. The latter shows again most students focus on the outcome because they often mentioned the correct result of the experiment as a criterion. This underlines the call of Bryce and Robertson (Bryce & Robertson, 1985) for discussing the criteria for a good way of experimenting with the students in order to achieve good learning results. While finding criteria concerning the area of social competences, which took place in another learning group, it could be noted that it was not easy to come to an agreement among the learning group and with the teacher. The discussion of criteria concerning social competences in this learning group lead to a discussion about the fact if such an evaluation could possibly encourage a “ruthless mentality”. The possibility that social and group enhancing activities and not attitudes aiming for personal gain could be an important aim of chemistry teaching and therefore a diagnosis-oriented assessment could aim at fostering such behaviour was in this case not taken in consideration. These examples show on the one hand, how important the phase of clarification of the criteria is, on the other hand it points out that this phase itself has its own diagnostic value. The fact, that the social competences are at first taken for those, which accentuate a single student from the group, is a self-revelation of the group which should not be valued but which is important to be recognized by the teacher.

Based on the criteria gained by a discussion between the learning-group and the teacher observation- and evaluation-sheets were designed, which could be used, in case of one learning group, only by the teacher, in other cases also by the students as introspection-sheet.

In the context of this article only the experiences made with the observations by the teacher shall be reported. They show that students who got mostly negative feedback in the evaluation sheets, had a previous mark in chemistry worse then a three (in Germany 1 is the best mark and 6 is worse) at a rate of 100%. It is interesting to see that the reverse connection does not apply: There is no possibility to draw a conclusion from the last grade in chemistry to the results of the use of the evaluation sheet. On the contrary there are students with bad grades in chemistry but a rather good evaluation gained this way. This is an important feedback for the teacher, and can be a starting point to observe these students closer in the future to test the justification of their current grade in chemistry. Also it is an encouraging feedback for those students who got to know that they, despite their bad grade in chemistry, based on the commonly designed criteria show good work in some parts of the lesson and that the teacher honours those efforts as well. As a result of this, the evaluation sheets became basis for discussions between teachers and students, which were aiming at a diagnosis and following study recommendations, and which were said to be extremely helpful for the teacher involved.
c. Modified and Incomplete Experimental Instructions

Based on the assumption, that the creation of material to use lab-work as a tool for a diagnosis-oriented assessment should be realizable for the teachers without any greater additional effort, an attempt was made to modify the already existing experimental instructions in a way that they could serve as an instrument for this cause. Of course, for safety reasons, the students were presented a complete experimental instruction before the actual conduction of the experiment in each of the reported cases. However the modified experimental instructions were used as means for a diagnosis-oriented assessment previous to the experiment.

i. Experimental Instructions with Blanks

An exceptionally good way of realising a diagnosis-oriented assessment… by modified experimental instructions turned out to be the use of experimental instructions with blanks within the description of the experimental procedure (see Figure 2). According to the teachers they provide them with rich diagnostic information about whether the student understood in which way the experiment is embedded in the lessons and what is the reason for doing it. Furthermore using this kind of instrument leads to a closer reading of the instructions by the students with the additional benefit that for filling out the blanks not only effort but also reflection of the experiment’s goals and the way of experimenting is needed.

<table>
<thead>
<tr>
<th>Ions</th>
<th>Ionos - „Moving Particles“</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>M</strong></td>
<td>Power source, cable, alligator clips, glass plate, graphite electrodes, forceps, pipette; bands of aluminium or copper; wool fibres; filter paper;</td>
</tr>
<tr>
<td><strong>Ch</strong></td>
<td>solid potassium permanganate KMnO₄ (O), dissolutions of sodium sulphate Na₂SO₄ (aq), ammonia NH₃ (aq); copper sulphate CuSO₄ (aq); potassium permanganate KMnO₄ (aq)</td>
</tr>
<tr>
<td><strong>V1</strong></td>
<td>The following - fragmentary – hints shall help you planning and conducting experiments independently which show that ions are moving particles.</td>
</tr>
<tr>
<td></td>
<td>Form a little &quot;puddle&quot; of .........................solution (diameter: 10 cm). Place a .........................in its middle and apply a direct current of about 5 V.</td>
</tr>
</tbody>
</table>

The teachers report as well that a certain amount of what they called “interesting errors“ occurred. Seeing those mistakes the assumption could be made that the level of difficulty as well as the impact of the instruments’ diagnosis depends on how many blanks are placed in the experimental procedures and in what spaces of the text they can be found.

If one was to replace all chemical substances with blanks throughout the whole text, a correct filling in the blanks would demand a deeper understanding of the experiment’s goals and the chemical properties of the substances used as if the blanks would only appear after the first steps of the experiments could be comprehended without a gap.

An important benefit of this instrument is that teachers reported in agreement that with the help of the material filled out by the students they could clearly see, if a student has understood why a certain experiment is conducted. By this the approach of Reif and St. John (Reif & St. John, 1979), who used similar instruments to enhance the students’ ability of scientific thinking, was extended into the field of diagnosis, assessment and grading.

d. Independent Planning of Experiments

If one logically follows the idea of experimental instructions with blanks, the thought of letting the students develop an experimental instruction all by themselves is at hand. When using this instrument a professional problem is presented during the lesson or within a written task and the students are supposed to come up with ideas of how this problem could be solved with the help of an experiment.
From a theoretical point of view, three things can be said concerning this instrument: First it addresses, along with the competence field of professional knowledge, especially that of problem-solving (here seen as creative and logically) thinking and therefore surely poses a special challenge for the students.

Secondly, the procedure of developing a hypothesis and further planning and conducting an experiment to verify it, originating from the presentation of a professional problem, is an important basis of every scientific research. So helping students gaining the competence to act in this way is an important goal of chemistry class.

The third point is that every student should know this procedure from their chemistry lessons, only that their own participation in this process, in the every day lesson, differs particularly.

Taking those three aspects into consideration one can assume that this procedure surely poses a challenge but not an excessive demand to the students. Nevertheless it has to be kept in mind that to develop an experiment students not only have to understand precisely what question shall be solved but in addition have to have a broad background of knowledge about the properties of chemical substances as well as about typical experimental procedures and the use of laboratory equipment. This makes working this way especially difficult for students.

An advantage of the instrument “planning of an experiment” can undoubtedly be found in the fact, that it can be used very flexibly by the teacher: It can be done verbally by a student, as a teacher lead discussion with the whole class, within groups, who present their propositions later, or also within the means of a written assessment in which the students have to write down their proposals.

Possibly it is exactly this mix of flexibility and obviousness, which popularizes the “planning of an experiment“ for the teachers: Despite of the known difficulty for the students, which lead almost every teacher involved in the first phase of the action research proposed the use of this instrument.

No matter what, it is to be noted that the requirement to conduct the planning of an experiment under the light of a diagnosis-oriented assessment had, according to the teachers, visibly effects on the students' attitude.

At first, it was feared that the use of the instrument would for the most part end up in the usual procedures of planning experiments in the classroom. On the contrary, the aspect of diagnosis-oriented assessment became so important to either teachers as well as students, that the teachers could note significant changes in the behaviour of their students. Thus the teachers could witness an increase in attention and interest and also an increased social pressure on those who did not play their part in the preparation of the experiment. In addition to that the teachers reported that they could clearly see, regarding the student’s proposals, if a student understood the professional-theoretical and the lesson’s background of the experiments.

e. Necessity of Prognosis

As a further tool the instrument “necessity of prognosis“ was used within this project. It consists of asking the students which observations they are expecting during the experiment and why they would occur, before they are allowed to conduct the experiment. Such an instrument was already introduced by Reif and St. John (Reif & St. John, 1979) but only focused on improving the ability of scientific thinking without taking diagnosis and assessment into account. This instrument was used in two different ways:

On the one hand a prognosis – as probably already practiced in most lessons nowadays but mostly not systematically applied – was asked from the students in the context of a teacher-student-discussion. However here – as well as with the planning of experiments described previously – evaluation is required. On the other hand, students were occasionally asked to give a written account of their prognosis.

Teachers who made use of one of the two versions, give account of a highly effective way of diagnosis. They could determine, seeing the prognosis or seeing the fact that a student is not able to give such a prognosis, if the student was able to comprehend the path from problem to experiment, and if yes, which conception he has of the functional coherences at hand. After the conduction of the experiment, students had to comment on their prognosis and the way
5. SELECTED RESULTS OF THE ACCOMPANYING STUDY

a. Results of the Rating-Questions

An accompanying quantitative study should reveal changes in the student’s attitudes and in the teacher’s view on their students. As mentioned before 5 teachers and about 130 students were involved in this study.

First of all it has to be mentioned that the rating items show a high standard deviation of up to 0.9, the scale of rating was from 1, meaning low agreement with the statement, to 4, which showed high agreement. Although such a high standard deviation is not unusual in studies in which students are involved it has to be kept in mind for the interpretation of the following results. A second trend which can be seen in all data is a comparably high correspondence between the attitudes of the students and the estimation of the students’ attitudes by the teachers.

<table>
<thead>
<tr>
<th>Estimation of the students by...</th>
<th>Students (average value)</th>
<th>Teachers (average value)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Study</td>
<td>Post-Study</td>
</tr>
<tr>
<td>Capacity of interpretation</td>
<td>3.06</td>
<td>2.87**</td>
</tr>
<tr>
<td>Interest in interpretation</td>
<td>2.95</td>
<td>2.71*</td>
</tr>
<tr>
<td>Experiments are an obvious way of solving problems</td>
<td>2.25</td>
<td>2.30</td>
</tr>
<tr>
<td>Reading of the experimental instruction</td>
<td>3.33</td>
<td>2.60***</td>
</tr>
<tr>
<td>Accuracy of observation</td>
<td>3.41</td>
<td>3.17</td>
</tr>
<tr>
<td>Importance of observation</td>
<td>3.56</td>
<td>3.10***</td>
</tr>
<tr>
<td>Experiments are leisure time</td>
<td>2.43</td>
<td>2.91***</td>
</tr>
</tbody>
</table>

Table 1. Self-estimation of the students and teachers’ estimation of their students

(*), ** highly significant (p<0.01), *** significant on highest level (p<0.001)

Looking at some selected results of the pre-study (table 1) one field of correspondence for example is the question if students are able to interpret the results of an experiment. The students show with the score of 3.06 that they feel able to do so and the teachers agree with that statement by showing that they think their students are capable of the interpretation of an experiment with the score of 3.00.

It is interesting that on the other hand the estimation about the interest in such an interpretation differs obviously. The students not only think that they are able to interpret but state that they are also interested in interpreting an experimental result. However the teachers – who agreed that the students can interpret an experimental result – obviously think that they are not really interested in interpreting.

The greatest difference in the whole pre-study between students’ and teachers’ answers is found in the question if experiments are an obvious way to solve chemical problems. The teacher answer with a score of 3.8 (out of 4) that they think experiments for their students are a highly obvious way of problem-solving. But their students just give a rate of 2.3 out of 4 – that means they do not see experiments as an obvious way of problem-solving in chemistry.

In the next three dimensions there are greater differences between the students’ self-estimation and the view of the teachers. The students state that they read the experimental instructions very carefully, that they observe accurately...
while experimenting and that they very well know about the importance of the observation. In all these three fields teachers are much more sceptic.

But in the last dimension teachers and students again nearly agree – and this is a very important point: Both groups answer that students do not see lab work as leisure time as it is often purported.

After half a year of experiencing a diagnosis-oriented assessment by practical activities there is a highly significant reduction in the self-estimation of the students about their capability of interpretation which goes together with a similar effect in the view of the teachers. The reduction of the teachers’ score is not significant because of the small number of teachers participating in the project, but it is interesting anyway: One can be sure that the teachers answered the questions about their students’ capability of interpretation in consciousness of the background of their whole experience on the job. The relevant change in their estimation shows that the instruments used in this project are able to provide the teachers new, additional information about their students which they cannot fully derive out of their “normal” experience. The following dimension is interesting as well: Concerning the interest in interpretation the estimation of students and teachers are getting closer and nearly meet on an average score.

The contrary effect is found concerning the question if students think that experiments are an obvious way of problem solving. The use of lab work as an assessment instrument does not seem to have any effect on the students’ estimation but the teachers obviously have learnt that experiments aren’t their students’ first choice to solve chemical problems, at least not to that extend they estimated (or hoped) before.

After using lab work as a diagnosis-oriented tool for assessment for half a year both groups are desillusionated about the care with which the students read the experimental instruction. It is obvious that the kind of instrument used in this project especially directed attention to this point, because the instruments very often were related to the experimental instruction. Much better is the teachers’ opinion about their students after half a year of working in this project as far as the accuracy of observation is concerned. The students lowered their rating a little bit, but the teachers’ estimation considerably rose and nearly meets the students’ score.

This effect of making the gap between the students’ and the teachers’ estimation about the students smaller can also be seen in the dimension “importance of observation”. The students now are more sceptic, but the teachers are a little bit more optimistic that their students know that the observation is a very important part of the lab work.

Concerning the question to what extend students see experimenting as leisure time the changes after half a year of assessment by lab work are surprising at the first glance:

Students now agree to statements that lab work is fun and leisure time with an average score of 2.91 after 2.43 at the beginning of the project. That is a change on the highest level of significance. And this change is confirmed by the teachers.

Different explanations are possible for this effect and this point will be of special interest later on, but here two possible explanations should be mentioned:

On the one hand it is possible that the students did not notice that they are diagnosed and assessed during their lab work and that they did not see any effects of such an diagnosis-oriented assessment. On the other hand it is possible that the instruments used for assessment changed the students’ view on their practical activities in a way that they now have greater benefit from lab work and because of this experimenting is now more fun.
Table 2. Attitudes towards lab work

<table>
<thead>
<tr>
<th>Opinion of</th>
<th>Students (average value)</th>
<th>Teachers (average value)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Study</td>
<td>Post-Study</td>
</tr>
<tr>
<td>Obligingness because of assessment</td>
<td>3.17</td>
<td>2.96*</td>
</tr>
<tr>
<td>Experiments are helpful for the understanding</td>
<td>3.34</td>
<td>3.15(*)</td>
</tr>
<tr>
<td>Belief, that the way one is experimenting shows if one has understood the theory</td>
<td>2.86</td>
<td>2.80</td>
</tr>
</tbody>
</table>

Table 2 shows three dimensions in which teachers and students were asked for their opinions, not for self-estimation or an estimation of the students but just their own opinion.

It can be seen, that teachers and students at the beginning of the project both fear that the assessment-aspect, understood as an assessment for grading, by lab work would increase their obligation and both state that they strongly consider experiments to be helpful for the understanding of chemistry.

The last question is of special interest for the research work, because it shows to what extent the methods used in this project are able to help diagnosing the understanding of chemical theory.

Here the students were more optimistic at the beginning than the teachers but both groups answer on an average level. After half a year of work in the project the concerns that lab work would be felt to be more obligate when it is done in the way described here and the students would not act as freely as before seem to be reduced. A result that fits with the answers in the dimension “experiments are leisure time”.

Concerning the question if experiments are helpful for the understanding of chemistry one can see that the optimistic opinions of students and teachers are gone. This is especially interesting because it can be assumed that the teachers most certainly answered this question on the basis of their whole experience on the job. That means that the teachers involved in the project primary after their participation in this research project see that experiments are not automatically helpful for understanding. This fits to the result mentioned above concerning the questions if experiments are an obvious way of solving a chemical problem.

Looking at the question if you can “read” understanding in the way a student is experimenting unfortunately now the opinions seem to be slightly more pessimistic but no significant changes can be found.

b. Results of the Open Questions

In this last section the answers to the open formulated questions of the questionnaire will be discussed. The questions focused on the pros and cons of a diagnosis-oriented assessment by lab-work as seen by the students. We also observed how the pattern of answers changed during the project. It is important to state at the outset that many of the students answered these open questions. There was far more than one statement per student in the pre- as well as in the post-study. These multiple answers indicate that the questions asked were important and of interest to the students.

In the following a closer look at two categories of reasons for and against a assessment by lab-work and the changes which occur after having experienced a diagnosis-oriented assessment based lab-work will be made. There were five important categories but it would exceed the length of this article to mention all of them:
The most mentioned category as a reason for assessment by lab-work is that students hope to get help for estimation (see table 3). They hope to learn how their teacher estimates them and hope for additional information for self-estimation. A second category of reasons includes statements in which the students claim that assessing lab-work is a suitable instrument for diagnosis. After the project there was no significant change in the quantity of reasons named in the category “practical activities are suitable for diagnosis”. This means that students were still confident that lab-work provides the teacher with important additional diagnostic information. But – and this seems to be very important – obviously this additional information did not arrive at the students. They didn’t sufficiently comprehend which information the teacher can filter out of these tools and do no longer hope that this method helps them to estimate themselves. This is coherent to a finding in the interview with some of the teachers involved in the project: In addition to the experiences reported above they told us that they did not feel used to the instruments enough so that they often did not tell their students about the conclusions they have drawn. By doing so the students could only implicitly guess about the results of assessing lab work, may it have been done in a diagnosis-oriented way or with the aim of grading. Finally, the categories of reasons, which are most frequently mentioned against an assessment of lab-work (see table 4) will be discussed.

Table 3: Students’ reasons for an assessment by lab-work

<table>
<thead>
<tr>
<th>Help for estimation</th>
<th>Fraction of all named reasons (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I would like to be assessed by practical activities because I’m interested in what my teacher thinks of me and as a help for self-estimation.”</td>
<td>23.3 Pre-test 8.9 Post-test</td>
</tr>
<tr>
<td>Practical activities are suitable for diagnosis</td>
<td>18.3 Pre-test 19.6 Post-test</td>
</tr>
</tbody>
</table>

Table 4: Students’ reasons against assessment by lab-work

<table>
<thead>
<tr>
<th>Assessment leads to pressure to do well</th>
<th>Fraction of all named reasons (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“You feel more pressure to do well.”</td>
<td>32.7 Pre-test 39.5 Post-test</td>
</tr>
<tr>
<td>Solely assessing results is not appropriate</td>
<td>22.4 Pre-test 7.9 Post-test</td>
</tr>
</tbody>
</table>

Table 4 shows the primary categories of reasons most frequently used to argue against lab-work as an assessment tool. First, and with a fraction of 32.7% of all named reasons very often mentioned, statements were found which pointed out that an assessment of lab-work would lead to a rising pressure to do well. The second category of arguments consists of statements showing concerns that lab assessment would be based mainly on experimental results – especially the quantitative result or the yield of an experiment. We must keep in mind that the pre-study was carried out before the students were informed about the aims of the project so that these concerns probably derived from the experiences the students made in their former chemistry classes or were just a guessing of possible assessment-criteria. Additionally one can see that students seem to neglect the aspect of diagnosis and tend to focus on assessment as a basis for grading as their open formulated answers touch this point much more frequently.

After being assessed by lab-work considerable changes in both categories took place. It was found that the pressure to do well obviously increased. This could be explained by the fact that teachers took the aim of assessing by lab-work seriously as well as the students tend to see assessment more as a tool for grading than for diagnosis. From the project’s point-of-view, the change in the second category is really important. After having used the instruments developed in this project students obviously no longer fear that the results of experiments could lead to a bad assessment-result. This indicates that the material was designed in a way that made clear which criteria they have chosen as a basis for their assessment and that the manual performance of an experiment was not the focal point.
6. CONCLUSIONS

Within the scope of this project, different methods with which the teachers can create instruments for a diagnosis-oriented assessing by lab-work by their own were introduced. Furthermore, it was given account of the teachers’ experiences. Concluding it can be stated, that all of the ideas introduced were practicable without much surplus load and – most important – it was possible to flexibly adjust them to each teaching and learning situation.

The teachers reported that the use of these materials enabled them to gain an additional perspective, which they deemed as important concerning a diagnosis-oriented way of assessment. For example, it was possible to get a better insight in the considerations and expectations with which their students conduct their experiments.

The appraisal that teacher gain important additional information by using the assessment of classroom experiments is explicitly confirmed by students who took part in an accompanying survey.

Recapitulate, it can be noted that the methods of assessment with the help of practical activities used here are convenient to qualitatively expand the repertoire of ways of assessment. For the teachers it provides in an easy way of gaining additional information about their students.

The survey done with the students also provides an interesting aspect, which can be relevant for the future development of the presented ways of assessment based on lab-work. Important is here the starting-point by showing that students do value those new methods but at the same time state to be unable to get to know enough about those additional information which the teachers are gaining.

Although the usefulness of the instruments presented appears in everyone’s opinion, it is still necessary to work out a way to convey students with those results, which were gained by the use of the new instruments.

This gained knowledge shows promise that an assessment based on classroom experiments in everyday chemistry classes can be established. Potential ways have been presented here and their effects can now be treated with consideration in advance to their use.

7. REFERENCES


Financial And Corporate Governance Characteristics Of FCPA Violators
Obeua Persons, Rider University, USA

ABSTRACT

This study examined salient characteristics of companies that had violated the Foreign Corrupt Practices Act (FCPA). This anti-bribery law makes it illegal for U.S. nationals, residents and U.S. companies-as well as foreign companies listed on U.S. stock exchanges-to make payments to any foreign official for purposes of obtaining or retaining business. Three purposes of this study are: (1) to help top management and board of directors improve their corporate governance so as to decrease the likelihood of FCPA violation, (2) to help investors avoid firms with potential FCPA compliance problems, and (3) to help regulators more effectively identify potential violators for investigation and prosecution.

This study examined one financial characteristic and seven corporate governance characteristics. They are profitability, whether the chief executive officer (CEO) chaired the board of directors (BOD), the tenure of general (legal) counsel or chief compliance officer, the BOD independence, the number of female executives, the number of audit committee meetings, the percentage of audit-committee accounting experts, and the focus on internal control effectiveness. Applying a logistic regression analysis to FCPA violators and their matched non-violators, this study found that FCPA violators had poorer profitability, shorter tenure of general counsel, fewer audit-committee meetings, a lower percentage of audit-committee accounting experts, and less BOD independence.
The Future Of Leadership: Men, Women, And Leader Communication

Robyn Walker, University of Southern California, USA
Jolanta Aritz, University of Southern California, USA

ABSTRACT

Although women in the United States make up about half of the workforce, only 14.6% of executive officer positions in the Fortune 500 and 16.9% of Fortune 500 board of director seats in 2013 were held by women, numbers that have remained flat for the past decade. Decades after the so-called “feminist revolution,” women are still struggling to be seen as leaders within organizations even though many have put in place hiring and recruitment policies to help eliminate this problem. Our study examines this disparity by observing how leadership emerges and is negotiated in discourse among male and female participants in decision-making groups in a masculine organizational culture. First, it identifies whether female participants randomly assigned to mixed-gender groups emerge as leaders. Second, it analyzes the discourse of those competing for leadership positions in mixed groups to identify the effects of leadership style on leader attribution by others. Of the 22 mixed-gender groups (N = 110) that took part in our study, no woman emerged as the unanimously chosen leader, even though women were identified as leaders by transcript coders. This article uses a case study approach to analyze leadership emergence in two mixed groups in which women were recognized by some members as demonstrating leadership. It then looks at a third case that demonstrates how some discourse behaviors that have been recognized as leadership may not be viewed as such in a masculine organizational culture. Study results illustrate how organizational culture can define accepted ways of “doing” leadership and affect who is and who is not recognized as a leader, particularly in terms of gender.

Keywords: Turn-Taking, Leadership Communication, Gender And Leadership, Discourse Analysis, Interaction Analysis
Contemporary Science In Chemistry Education In Germany
Dr. Mareike Frevert, University of Kassel, Germany
Prof. Dr. David-Samuel Di Fuccia, University of Kassel, Germany

ABSTRACT

The improvement of teachers’ professionalization is an important point of discussion in higher education.

Students who are going to be chemistry teachers in Germany often don’t study chemistry in such a depth that they get in contact with real current research. This is advocated by the fact, that school curricula mostly seem to reflect the status of chemical knowledge up to the 1950s. In contrast, research (Friedrichsen et al, 2009) shows that the higher a teacher’s content knowledge is, the better his teaching skills are. Our project therefore focuses on developing and evaluating a setting that brings chemistry teacher students in relation to today’s research in chemistry. The main research question of our empirical study in this context is: In which ways does the chemistry education students’ professionalism change if they are confronted with today’s research?

To answer this question the study is developed on the theoretical basis of Shulman’s concept of teacher professionalization (Shulman, 1986), with a focus on Subject Matter Content Knowledge and Pedagogical Content Knowledge, including a third dimension, that of Beliefs. Those three categories are examined under consideration of the competence-oriented theory. (Baumert and Kunter, 2006).

This study follows a mixed methods approach of quantitative methods (questionnaires) and qualitative methods (interviews, portfolio, videography) which are combined to allow the triangulation of data obtained. The research design allows for the collection of data to be carried out six times within in a period of three years.

For the implementation of the project into the study program of our chemistry teacher students a special learning environment was developed cooperatively with chemical researchers, as combining chemistry education with real, not school oriented contemporary chemistry research is a new perspective in higher education in Germany. This setting, as well as our evaluation tools and first results obtained will be presented in this article.

Keywords: Contemporary chemistry research, chemistry education, teacher professionalization

INITIAL SITUATION

The situation of chemistry teacher students in Germany could in many ways be described as a difficult one: One specialty of German teacher training is the study of two subjects, like math and English or chemistry and arts. In addition to that teacher trainees have to study pedagogy. This leads to the demand that students are expected to gain high knowledge and professionalization in a comparably high number of fields. As it is stated in several empirical studies like TEDS-M (Blömeke, 2010) a high demand for subject matter content knowledge is an important aspect for teachers’ professionalization in this framework. These studies showed that the higher the content knowledge is, the higher the skills for teaching are. So, for example a teacher can react more confidently, if he is familiar with his subject. He can trust his knowledge and feels less uncertainty by imparting content of the subject. On the other hand, the chemistry school curriculum seems to reflect the status of knowledge up to the 1950ies like the curriculum for the upper high school in Hesse. (see therefore: Hessisches Kultusministerium, 2016). By now it exists less until no focus on modern researches and contents of chemistry, which leads to the fact that aspects of modern research in chemistry aren’t in the focus of chemistry teacher training at the university as well. (See therefore the recommendations of the GDCh, 2008)
In a more provocative way we could say that German chemistry teachers do not teach chemistry itself but the history of chemistry and that universities prepare chemistry teacher students more for teaching the history of chemistry than for teaching chemistry. At the same time context orientated approaches (Parchmann, 2007) are promoted as modern life aspects and chemistry could go hand in hand for a better understanding of science in school (like “Chemie im Kontext”). But in order to combine chemical knowledge and contents with pupils’ life and interests, teachers are in a need to know more than the history of chemistry as these approaches require a deeper comprehension of modern chemical technology, procedures and productions. So, it could be stated that the demand of modern content knowledge for teachers’ professionalism doesn’t fit with the conditions of their teachers training.

Another problem that is maybe caused by the missing contact of students with modern chemistry is, that German chemistry teacher students don’t experience the ‘real’ chemistry research and by this are unable to be realistic representatives of their subject.

Hand in hand with the problems of the teacher trainer studies described so far we can see problems with teaching chemistry in schools that may be caused by the way chemistry teachers are trained: Pupils often don’t see relevance in chemistry because for them it has nothing to do with their lives as modern applications like smartphones, laptops etc. This modern applications cannot be explained with what they learn. In addition to that pupils tend to have a quite naïve view on what science is like and what scientists do which could be caused by the fact, that even their teachers didn’t get a realistic inside into real research in chemistry during their studies.

So, there is a number of good reasons to think about possibilities to close the gap between modern chemical knowledge and chemistry teacher training and to increase the contact between teachers students and modern aspects of their subject.

THEORETICAL BACKGROUND

There are less actual studies in chemistry or even in science that investigate the influence of involving chemistry teacher students into contemporary chemical research. But as stated above integrating modern chemical research in chemistry teacher training could be an important, if not crucial aspect of future teacher professionalization.

A proposal for the operationalization of professionalism of teachers’ competences is the concept from Lee S. Shulman who distinguish between different kinds of knowledge: One the one hand a teacher should gain Subject Matter Content Knowledge. This refers to its amount and organization in the mind of the teacher (Shulman, 2009) and it is different for every subject or discipline a teacher has to teach. In his subject the teacher must understand the contents, what content-structures occur in the subject and why the content is structured in this way. The Subject Matter Content Knowledge (following as shortcut CK) is a prerequisite to be and to feel as a representative of the subject. A second component of the professionalism of teachers’ knowledge is the Pedagogical Content Knowledge (following as shortcut PCK) what means subject matter knowledge for teaching (Shulman, 2009). This includes the most powerful presentations, analogies, illustrations and explanations which make the contents of a subject comprehensible for others (Shulman, 2009). Besides, other kinds of knowledge exist like curricular knowledge, but there is no focus on in this project. The forms of knowledge in teachers’ professionalism are highly investigated in several studies (Ball, Thames, Phelps, 2008), especially for the subject of math education, and it could be shown that the categories of CK and PCK correlate in some ways. In addition to that, several studies show a high correlation of content knowledge with other skills for teaching in a proportional way. The TEDS-M-study (Blömeke, 2010) found out, that the higher the content knowledge is, the higher the skills for teaching are: A teacher can react more confidently, if he is familiar with his subject. He can trust his knowledge and has less uncertainty by imparting content of the subject. This is explained by the aspect of “being familiar with”. The more familiar a teacher is with the contents of his subject the more possibilities he has to react on unexpected questions or situations which can occur in school lessons.

In this context, the different aspects of teachers’ professional knowledge are not only to be described as different, more or less unconnected sides of a medal for teaching: A detailed and broad pedagogical view is undoubtedly very important for teachers and it is also clear that the knowledge of the subject a teacher wants to teach is one of the most fundamental competences (Ball et al., 2008). But those aspects of knowledge interact with and influence other as Shulman shows, when he suggests to define PCK as an amalgam that contains and combines knowledge of content
with knowledge of teaching (Shulman, 1987) for each subject. This is an interesting structural approach that has some analogies in chemistry, for example when it comes to the students’ and teachers’ understanding of different chemical levels like the macroscopic, microscopic and the symbolic one. Here it is important to have knowledge about each of these levels but to be able to bring the aspects of the levels together in a way that is more than a simple sum of aspects but leads to a deeper understanding. (De Jong, Van Driel, 2004) All these chemical levels could be important or a deeper understanding of CK likewise for PCK in chemistry and require the movement from one level to another.

As mentioned above the actual situation of chemistry teacher education is unsatisfying in the sense that it can be doubted that teachers hold a proper view on the nature of chemistry as a science. By this the important discussion in science education on the nature of science (as shortcut NOS) comes into sight. From the educational point of view nature of science is mainly categorized into the following characteristics to build a consensus within the education of science community: a) tentativeness of scientific knowledge; b) observations and inferences; c) subjectivity and objectivity in science; d) creativity and rationality in science; e) social and cultural embeddedness in science; f) scientific laws and theories; g) scientific methods (Lederman et al, 2002).

There are also several studies which focus on the nature of science views as part of the beliefs influencing teaching and learning like the studies of F. Abd-El-Khalick, C. Mc Donald or S. Erduran. From the science education point of view epistemological beliefs, and within those predominantly the nature of science views, are often divided into a constructivist and an empiricist one (Seidel et al., 2009). The constructivist view of nature of science means among others that scientific knowledge is changeable and socio-cultural values have an influence on scientific thinking. An empiricist nature of science view is guided by thinking of an objective reality in science and the focus on valid knowledge out of scientific experiments. Several studies show a correlation between a constructivist nature of science view and a constructivist thinking of and belief in teaching and learning (Peterson, (1989); Staub and Stern, (2002)).

So, the beliefs and the thinking about science and how science works (also in a meta-perspective way) have an influence on how teachers think science is teachable and how pupils should learn science and in order not only to teach the ‘hard facts’ of chemistry but also what chemistry or even science is in an epistemological point of view a broad and deep understanding of the categories of nature of science is important. Unfortunately, studies reveal a number of problems in this respect (Tolvanen, 2014), so that for gaining a better understanding of chemistry or even science a more holistic view of all facets of science seems to be advisable. Tolvanen (2014) suggests to achieve this by teaching more nature of science view in form of historical aspects in different ways, while confronting teacher students with real contemporary chemistry research may be another option to influence the nature of science view of (future) teachers.

While Shulmans’ concept is used to operationalize teacher’s professional knowledges the philosophy of science of Gaston Bachelard can be used to frame and structure the understanding of ‘modern’ chemistry, ‘modern chemistry research’ and thereby different nature of science views.

The philosophy of Bachelard considers lots of the characteristics of modern chemistry: The philosophy focusses on abstraction, technique and rationalistic thinking. These are important to build the scientific spirit who is always critical about his scientific opinion. A possible answer to the question “What is chemistry?” is a definition as a technical, mathematical, practical and theoretical and complex discipline, which has no space for sensory impressions and simple explanations. Bachelard has defined three steps of the formation of the scientific spirit: The first step is called the concrete step which means admiration of nature and first imaginations of phenomena. The second step is the concrete-abstract step and contains first abstractions but just in the case of sensory impressions. Abstraction is combined with sensory impressions in reference to the phenomena. The third and last step is called the abstract step. It is characterized by a lack of immediate experience and intuition and the orientation on rational and abstract thinking instead. The third step describes modern science since the theory of relativity (Bachelard, 1987). With the philosophy of Bachelard a meta-perspective definition of what chemistry is about and additionally how knowledge is engaged in modern science/chemistry can be given.

Bringing together Shulmans concept about the forms of teacher’s knowledge and the definition of chemistry as modern science following the idea of Bachelard we assume that - beside the content knowledge - parts of PCK that are important for teaching students need a simple, direct and non-abstractive approach, as for example: Referring to examples or using several different ways for illustrating chemical contents which are combined with sensory
impressions on the macroscopic level tangible by experiments. Such an at least partly non-abstractive approach is important to make chemical knowledge transparent and understandable for pupils. (Rossa, 2012) So, following this theory a chemistry teacher should cope with both sides: the abstract one of modern chemical contents in the CK-case and the teachable, at least partly non-abstractive one in the PCK-case.

Thinking theoretically about bringing teacher students in contact with real, contemporary research in chemistry and about the special abilities a teacher should have in order to make chemistry accessible for pupils, therefore inevitably leads to a dialectal structure: On the one hand, there is the abstraction in chemistry, which is part of CK, on the other hand for PCK simple and non-abstractive examples and impressions are needed. As it is consensus that a professional teacher needs both, a high level of CK and a high level of PCK, it gets clear, that he needs a high level of CK-oriented abstraction, complexity and rationalistic thinking and at the same time in the context of PCK has to be able to reduce the contents, find simple illustration and use first sensory impressions. The core advantage of using Shulman’s model in such a dialectic combination with Bachelard’s theory therefore is that of distinguishing CK and PCK in their basic characteristics.

Additionally, the nature of science view of a teacher or a teacher student can be included into this dialectic structure by the assumption that a modern view of chemistry is more influenced by abstraction and technique (the CK-side) than by an antiquated view chemistry on chemistry that is guided by seeing the simple contents and explanations in science. This fits well with the distinction between a constructivist and an empirical view on science, where – as stated above - the modern science view resembles the constructivist view by focusing on the influence of socio cultural values or the changeability of scientific knowledge, whilst the more antiquated nature of science view resembles the empirical nature of science view by focusing on objective epistemology and thinking in science.

As explained before the relation of the three aspects CK, PCK and beliefs can be described in a dialectical as shown in the following figure:
The dialectical relationship of the aspects important in this study

On the right side of the figure, a high level of abstraction following the theory of Bachelard is located, which in our case means a high level of CK, too. On the left side, a high level on intuition is located, which in our case means a high level of PCK.

The crossed-over yellow arrow thereby visualize the dialectical movement in teacher professionalism meaning that CK and PCK have other prerequisites in the field of orientation to abstraction and teacher students have to “move” between those two poles actively for getting a high or even a higher professionalization.

The beliefs below are integrated as a more intuitive thinking about chemistry goes with a lower orientation towards abstraction and shows a more antiquated and empirical view on science whilst a modern science view contains a more abstractive thinking. In this model, a high level of CK could lead to more modern view on chemistry, while on the other hand it could lead to a de-professionalization in the field of PCK, if the students turn out to be unable to move between the dialectic poles actively. Because of this it gets clear that confronting teacher students with contemporary chemistry research asks for a special learning environment that assures that the possible improvement in CK and beliefs will not be achieved at the expense of a decrease in the PCK-level.

AIMS OF THE STUDY

First Aim

Creating a learning environment that allows chemistry teacher students to experience real research in chemistry is one of the most important aims of this study. Maybe this is one of the keys to combine modern chemical contents with chemistry education that allow students a better understanding of their subject.
Similarly, the learning environment offers the opportunity to move actively between the dialectical poles of abstraction and intuition. Hopefully students could use the learning environment to train both poles.

Second Aim

According to the first aim the effects of the learning environment in the fields of CK, PCK and the beliefs (specially the nature of science-aspects) could be evaluated. This could be important to improve teacher training programs in some way depending on what the results are.

LEARNING ENVIRONMENT

In order to combine contemporary chemical research with chemical education for chemistry teacher students a teaching concept has been developed that includes both aspects within one seminar: After an introduction the students go to visit one research groups of the Institute for Chemistry first. For four weeks, the chemistry teacher students observe the scientists, ask questions and participate in the meetings of the research group. The students have the role of inactive observers. That means they do not perform experiments etc. by their own. In the case reported here, the students went to the laboratory of the physical chemistry research group. Those scientists deal with topics like random laser, mixtures of surface-active-agents for solar cells or nano-transistors. Each student accompanied one scientist and observed him for about 12 hours in a period of four weeks.

After that the students are asked to develop teaching materials what is based on the chemical research they saw. That means they should design something for school contents what doesn’t exist yet, because the research they see is not part of school curricular or general topics in school. They are free to choose the way how they design their material, which part of their observations and how they reduce research contents for the comprehension of pupils. This part of the seminar is within chemistry education. In this phase the students have a lot of time to work independently, but there are several points of time (approximately every 3 weeks) where they can express ideas they have for the school material topics, share their development and ask for feedback. In addition to that there are also fix moments at the beginning of the seminar for giving input, especially on methods of reducing a scientific content in order to make it accessible for pupils. At the end of the seminar the students present their material in front of the seminar and the chemical scientists.

The teaching concept will be performed five times in a period of two and a half year, each class counting five to six students as there is no capacity for more observers in the research groups.

METHODOLOGY AND INSTRUMENTS

Methodology

To evaluate the changes in CK, PCK and the beliefs a wide range of instruments is used within a mixed-methods approach with an emphasis on a qualitative research design:

With the exemption of using a questionnaire to detect changes in the nature of science-views and the beliefs of the students by using a quantitative pre-post-design (see below) the focus of our methodology lies on qualitative content analysis (Mayring, 2010) of different data sources in the field of CK and PCK, which will be specified below. In order to use the qualitative content analysis two category systems were developed by deduction in respect to the different claims of CK and PCK. By using two category systems it is possible to respect the dialectical parts of the structure of CK and PCK. For example: A high value of abstraction could, as a category of CK, stand for a high level of CK, but also, as a category for PCK, stand for a low level of PCK. So, the two category systems contain mostly similar categories but in different meanings.

The categories for the CK-System are based upon the philosophy of science of Bachelard. Therefrom the PCK-category system is derived with the important detail that, following the results of, the assumption is made that teaching experience and intuition is a main factor for a high PCK.
Instruments for CK

To evaluate the effects on the students’ content knowledge a lab report, that is written by the students after their time in the laboratory, is used. In order to structure this report, the students get a list of questions before visiting the research groups which shall be answered in the context of the lab report. One of those questions asks for the students’ knowledge on the topic before entering the lab, another one asks for a description of the methods they saw in the lab. Also, the students are asked to describe the research objects in their chemical property, sense and behavior. We investigate the students experience relating to their knowledge in depth by using qualitative content analysis following Mayring (2010).

Thereby we are able to detect changes in the students’ content knowledge qualitatively, although this method does not allow quantitative or comparative statements. As the research one student sees is not in our planning and not part of his normal study curriculum and as all research topics are different for each student, a methodology allowing comparisons in an evaluation of content knowledge would lead to reducing the topics to the ones traditionally taught in chemistry teacher education and thereby contradict the first aim of our project. That is the reason of not using a traditional pre-post-test design.

Instruments for PCK

For evaluation of the effects on PCK a pre-post-videography is used: As a pre-test students are asked in a seminar lesson at the beginning of the course to define from their point of view which aspects of a topic have to be analyzed in order to decide if and how it should be taught. Afterwards they get categories for doing such a didactical analysis following the theory of Klafki (Klafki, 1974) in form of a text for a comparison of their opinion and the text. The brainstorming at the beginning as well as the discussion of their ideas against the background of the text are videotaped and analyzed using qualitative content analysis (Mayring).

In the post-videography the students are asked again what to do for doing a didactical analysis. Afterwards they get an article about research on a special and modern form of new solar cells and are asked to do a didactical analysis of the topic covered in the article. The videotaped discussions again are evaluated by qualitative content analysis (Mayring). In addition to these two fixed points of measurement students are videotaped during all the seminars in order to back the results of the pre-post-comparison by students’ statements about the teaching material they developed and why they arranged it the way they did.

In addition to those methods the students are asked to document their work on teaching material by a portfolio that contains the final material produced, the preliminary versions and the students’ ideas and thoughts related to transforming the content they saw in the research group into teaching material for school. This seems especially suitable to get an impression of the students’ ideas as well as of their transition during the time of the course.

Instruments for the Nature of Science View

For the nature of science view of the students we use two different questionnaires well known from literature (Riese, 2011, and Chen, 2009). Both questionnaires are used with a four step Likert scale from “1 = I strongly disagree” to “4 = I strongly agree”. The test of Riese has 12 items that ask for the nature of science-view aiming to answer the question “What nature of science view do students have?”, whilst the 46 items on nature of science-views in the questionnaire of Chen try to reveal the reasons of the students’ nature of science view. Both questionnaires are used at the beginning of the course and at its end to allow pre-post-comparisons.

In order to ensure the students the utmost benefit in regard to their learning and at the same time to be able to evaluate the effects of our approach properly, the seminar is therefore structured and accompanied by measures of evaluation as indicated in the figure below:
By implementing the above described learning environment and using the evaluation tools mentioned, the following results on the effects of the approach could be obtained with the first group of students (N=6).

**The CK-Evaluation**

In reference to the CK-category system the lab reports show a high use of the category of technization. In their lab reports the students described much of the techniques that were used in the laboratory like several steps of an organic synthesis in details or the procedure of preparing a metal surface for a laser experiment. The students also showed a good standard of chemical reasoning, for example when explaining special kinds mixtures used for preparing solar cells. We could also notice a high standard of reflection in those parts of the lab report in which students described the lab research in a meta-perspective way: They mentioned the failures in the research they saw and explained the ways of overcoming problems, so for example they said by attending the research groups they were realizing why special methods were used in their respective ways.

But we couldn’t find theorization in the lab report, what means students didn’t use chemical or scientific theories for explaining the chemical aspects.

The students’ feedback of their lab experience was positive. It was a good experience for them and they noticed that they after their research experience they could better imagine what chemical research is like. They even mentioned a more positive view on physical chemistry because of the utilization of the research they saw.

**The PCK-Evaluation**

Using the methods described above we were able to notice an increase in the level of PCK. At the beginning of the course students’ didactical analysis mainly focused on requirements of the curricular. They didn’t realize perspectives like the importance of a topic for pupils’ life, the society or the future. They mainly thought of ‘legalizing’ the contents for teaching them in school regardless if it has references to literacy or practice.
In the post-test the videography showed that the students’ view when didactically analyzing contents focused more on relevance for every day’s life, methods that can be used in school lessons and possible experiments for demonstration.

The portfolios the students have written allowed for a more detailed view of the changes of their PCK. By analyzing the portfolios the increase in the students’ PCK-level can be detected in a more detailed way: The portfolios showed an increase in the category of contextualization, meaning that the students focused much more often on setting a content in relation with meaningful surroundings. We also noticed an increase in theorization, what means that explanations of the students’ materials were increasingly often backed with theoretical approaches of education. In addition to that an increase in using creativity for designing teaching material could be detected over the period of the course.

Finally, and having the theoretical background in mind not quite expected, also an increase in abstraction could be seen in the portfolios. An explanation for this could be that the complexity and the content of the research topics sometimes made it too difficult for the students to find a way for reducing the contents.

Our analysis furthermore revealed that nobody focused on experience or intuition, probably because the students don’t have enough experience and routine in teaching, so that it is understandable they were not able to use it.

**Evaluation of the Nature of Science Questionnaires**

As the number of students involved in the first round of our project is only six, the results of the questionnaire-study don’t claim quantitative meaning, nevertheless they show some trends of the students’ nature of science view and its changes during the project.

Comparing the topics of the items of both questionnaires it first can be stated, that the students generally answered both questionnaires in the same way, as the mean values of the items focusing the same topic in both questionnaires always were similar.

The most obvious change that could be seen between the pre- and the post-test is, that the pre-test showed mean values that were extreme in comparison to the mean values of the post-test. This indicates, that the students were at the beginning of the course quite ‘sure’ about what chemistry and chemistry research ‘is like’ and that they are much more cautious or uncertain after having experienced this learning environment. Uncertainty in this case means a more multi-perspective or more critical thinking about chemistry or science in general, an assumption that can be supported especially by combining the answers students gave in both questionnaires, as the second one (Chen, 2010) asked for the reasons for the students’ views in detail.

An indication of the increasingly critical view of the students on the nature of science can be found in their answers to the item which asked for the students’ opinion on the status of theories throughout the course of time: In the pre-test the students’ view was rather determined by a revolutionary science view, whereas in the post-test students preferred a more evolutionary science view.

Another trend the tests show is that in the pre-test the students’ view was more characterized by the idea that scientific theories are discovered, whereas the post-test showed, the students now more believed in the invention of theories. The both effect just mentioned can be interpreted in a way that the students’ view of chemistry or science during the project develops into a more constructivist one. Following the theoretical framework of our research this would allow the conclusion that the students developed a more modern view of chemistry or science, as a constructivist view on science understands it to be less absolute and less objective.

On the other hand, the results of the item concerning the scientific method don’t show a shift to a more modern view of science in this aspect, as the students’ belief in a universal scientific method which is used all the time is nearly equally strong in the pre- and the post-test nearly.
8. REFERENCES

Author requested nothing in proceedings.
Lesson Study: Research On Combining And Sharing Content And Pedagogical Knowledge To Effectively Reach Students’ Unique Needs

Thomas D. Wright, Ph.D., University of New Orleans, USA

This mixed methods case study investigated mathematics teachers’ perspectives of the effects of the Lesson Study Process on their content knowledge, pedagogical knowledge, and the potential for students’ achievement. Teachers from elementary, middle, and secondary schools in a southern metropolitan area were sampled for this study. Results from this study indicate that the teachers believe that each of the three areas are improved when employing Lesson Study as a form of sustainable teacher professional development.
Netpromoter Scores As A Measure Of Learner Satisfaction In Massive Open Online Courses (MOOCs)

ABSTRACT

There has been heated debate since the large scale adoption of massive open online courses (MOOCs) in 2012 that the completion rates are dismal. Proponents of MOOCs have stated that the low barrier to entry and ease of access to materials is a different paradigm than the elite institutions and the rigorous academic admissions processes for universities. These proponents have argued that it is not appropriate to look at completion rates as a measure of learner satisfaction.

This session will walk through the idea of using NetPromoter scores as an indicator of learner satisfaction with MOOC content. The presentation will look at profiles of MOOC learners with attention to intent and satisfaction. Previous research looking at identifying types of learners in MOOCs and data on completion rates will be presented. Data from a research project measuring NetPromoter scores in University of Virginia (UVa) MOOCs will be presented.

Description of Session:

1) I will survey the audience to see they have experience with MOOCs and their thoughts on completion rates
2) I will present a slide show walking through:
   - Birth of MOOCs
   - Comparison of MOOCs vs. residential education – ease of entry
   - Research on types of learners in MOOCs
   - Research on completion rates in MOOCs
   - Conceptual overview of NetPromoter Scores
   - Research of NetPromoter Scores in UVa MOOCs
3) I will converse with participants and answer questions

Audience Take Away:

- Understanding of how to look at learner satisfaction in MOOCs in terms of completion rates and NetPromoter scores
- Ideas for creating or consuming OER content

Interactivity: How you plan to make your session interactive and engaging?

- I will utilize social media to develop a conversation before, during and after the presentation
- I will encourage session participation for discussing transformative teaching

Themes: Use of technology in teaching and learning, using technology to reach global audiences, massive open online courses, OER, learner engagement, learner pathways, MOOCs, disruption in higher education, NetPromoter Scores, Completion Rates, Learner Satisfaction
Hybrid Learning:
The Actual Case Of A Graduate Systems Engineering Program For The Industry

Muzaffar A. Shaikh, Ph.D., Florida Institute of Technology, USA
Shoaib M. Shaikh, Ph.D., Florida Polytechnic University, USA

ABSTRACT

This paper first examines prevalent online teaching/learning models and then presents a hybrid learning model that continues to be used since 2003 for the delivery of Florida Tech’s Master of Science program in Systems Engineering (MSSE) for two high-tech corporations.

Teaching is or should be at the heart of a university's responsibilities. Students carry their classroom learning experiences all their lives. Today more than ever and due to the Internet and social media easy-access, innovative teaching tools and techniques need to be brought into the classroom not just for convenient teaching/learning but also for grasping technical subject matter by actually seeing examples. Massive Open Online Courses (MOOC [1]) and Flipped Classroom [2] approaches are proving to be extremely rewarding for anyone who is interested in learning.

In today’s environment, course delivery varies on a spectrum of 100% in-class (traditional) teaching to 100% online. This culminates into three broad categories of course delivery methods - - 100% in-class, 100% online, and Hybrid Learning.

- **100% In-Class or Traditional Course Delivery [3]:** There is nothing like being present in the class room and learning face to face. Certain students and corporations expect their employees to learn face to face. Besides, certain engineering and science courses especially involving lab work and mathematical derivations fall in this category. Undoubtedly, tools are rapidly being developed to overcome part of the classroom-only dilemma. Yet, some faculty members and students (especially parents of undergraduates) firmly believe that face to face learning is the best way to absorb difficult mathematical concepts.

- **100% Online [3]:** This method entails 100% learning via internet (YouTube, CANVAS, or a dedicated websites, etc.). There is no face to face meeting at all. Students view videos, PowerPoint-type lecture online and turn in all their assignments online. Advantage of this method is that working individuals can learn at any time of the day that is convenient for them (after the kids go to bed, after work, etc.). Business-type courses lend themselves to this way of course delivery.

- **Hybrid Learning [4]:** As the name itself suggests, this method entails both in-class and online learning particular topics or the course material. Here usually, there is in-class learning but the lecture is video-taped and stored on a course related library (e.g., CANVAS). This allows students who did not make it to the ‘live’ class, to view the missed lecture. Q&A’s can be Synchronous (while the ‘live’ class is in session) or Asynchronous (at weekly or scheduled times). Online meeting tools such as SKYPE, WEBEX, GOTO MEETING, etc. are employed for virtual meetings with student groups. Sometimes, conference calls or simple emails are used as well.

Hybrid learning consists of several models. For example, one model entails in-class teaching say for one-third of contact hours and the rest of two-thirds of hours can be online. The choice of a particular model depends upon the specific need by a client.

A REALWORLD CASE STUDY: In 2003, Florida Institute of Technology (FL Tech) was approached by two large high-tech DoD (Department of Defense) contracting corporations, to develop and deliver a Master of Science program in Systems Engineering (MSSE) for their employees. Both corporations were interested in face to face ‘live’ classroom setting as well as making videoed lectures and course material available online for employees who may
have to miss classes due to business travels or busy schedules. Course topics were mutually developed over a period of time and after meeting a number of times. Special year-round evening schedules were developed keeping in mind FL Tech holidays and corporations vacation schedules. Currently, FL Tech is conducting 10th rotation or cohort for one corporation and 8th rotation for the other. A rotation includes the same set of students who start and finish at the same time. The degree duration is two and a half years. Success factor include adapting to the corporation request on electives set of courses, experienced faculty, and corporation-related projects.

Discovering the success of FL Tech’s industry MSSE program, several additional companies have come forward and have approached for similar programs.

REFERENCES

Author requested nothing in proceedings.
One Century And Counting: An Examination Of The United States Estate Tax System
S. Keith Lowe, Jacksonville State University, USA

ABSTRACT

2016 marks the century milestone of the enactment of one of the more controversial U.S. Federal taxes: the estate tax. Originally enacted by Congress as a component of the Revenue Act of 1916 to finance U.S. involvement in World War I, the estate tax has experienced many changes over the past millennium. The majority of the modifications dealt with exclusion amounts and maximum tax rates. As of 2016, the federal estate tax regime currently taxes an estate’s value in excess of $5.45 million at a rate of 40%. However, despite the fluctuations in exclusions and rates, the basic premise of the estate tax policy has remained unchanged: each estate is taxed on the wealth it transfers to its beneficiaries, as opposed to the beneficiaries being taxed on the shares they receive.

Despite the fact that the estate tax applies to fewer than 2% of people dying each year and is a relatively small source of revenue compared to other revenue streams, the estate tax’s history has been full of contention. Critics of the estate tax have often labeled it as a “death tax” in that it assesses a double taxation on assets that have previously been taxed as income. Supporters of the estate tax view it as a reasonable and fair source of revenue for the Federal government.

This paper examines the history of the U.S. estate tax, policy changes over the past century, fluctuations in exemptions and top tax rates, and arguments supporting and opposing the legitimacy of the tax. Also, current structure and policies of the estate tax are discussed with an analysis of the future implications of the program.
Personal Perspective Paper: Multicultural Competence And Art Education As A Theoretical Framework
Afrah Alowaydhy, University of Toledo, USA

Every study is based upon the ability to make informed and authoritative judgments regarding the adequacy of the available evidence, the source of that evidence, and the alternatives available in the light of that evidence (Nixon, 2004). For this main reason, theories are very important for researchers in curriculum and instruction. Nixon has argued that competent practice, human thoughtfulness, and theoretical considerations are in dynamic interaction in any serious challenge to professional development. I strongly agree with Nixon that theory can provide me with the conceptual tools to read meaning and intent into our own actions and the actions of others as well as examine the possible effects of those actions on others and ourselves. For example, when I examined aesthetic theory, I shaped my own perspectives about art as a transformative process that corresponded with the perspectives of Dewey and other educators. I further agree with Nixon that our own theory can be developed by listening to others and engaging with theory. For example, I conducted an interview with a faculty member in the curriculum and instruction department to help shape my own ideas about funds of knowledge theory and the theory of multicultural education. In my study, I will investigate how various art activities contribute to developing cultural competence in teachers. The study will also provide a rationale supporting incorporative art activities in the context of cultural competence. The study will explore teachers’ assumptions using a qualitative research approach and the lenses of aesthetic experiences theory, multicultural theory, and funds of knowledge theory—all of which fit under an overarching constructivist research paradigm.

As I focused on developing my own theory of cultural competence and art education, I conducted an interview with Dr. Marcella J. Kehus, who is familiar with multicultural competence, the funds of knowledge theory, and multiculturalism. Her research experience and educational philosophies support the development of my future research on cultural competence and art education. Kehus used to teach students to read by using books written by authors of various religious, ethnic, cultural, and racial backgrounds (personal communication, April 12, 2016).

Educational policies encouraged acculturation in the public school system before multicultural pedagogy emerged. Dewey expanded education beyond known and accepted boundaries to discover practical ways of knowing, perceiving, and understanding, and he extended this “knowing” into “genuine community life” (Goldblatt, 2006, p.18).

I became interested in multicultural competence and art education after completing several doctoral courses. For example, when I completed a course on educational sociology, I recognized research concluding that culture influences creativity, which is valued as “a motor of economic and social innovation” in a world that is experiencing rapid cultural changes and increasing cultural diversity (Leong, 2014, p. 207). Culture is the most influential force in our world. It plays a central role in determining what we perceive, how we understand our world, and how we appreciate ourselves. As people from diverse cultural groups communicate with each other, values sometimes conflict. When we don’t appreciate each other, we sometimes respond in ways that make partnerships unsuccessful (Chisholm, 1994).

During our conversation, Kehus focused on ideas and questions that inform multiculturalism, such as what it means to be culturally competent, what it means to know about people who are different than you, and what “diversity” means (personal communication, April 12, 2016). Typically, “diversity” refers to different genders, different races, different ethnicities, different religions, different opinions, different beliefs, and different social classes. Actually, Dr. Kehus reported that there are nine different aspects of diversity. According to Kehus (personal communication, April 12, 2016) cultural competence is part of everything we do. Cultural competence always refers to adaptability because definitions of diversity are always changing. For example, gender identity is currently an important topic in the United States, and legislation has been debated about issues such as “gender neutral” restrooms.
According to Kehus, cultural competences also are very important for educators (personal communication, April 12, 2016). Especially in universities, a large number of international students have entered the U.S. educational system; therefore, it is essential for instructors to possess cultural competence. However, cultural diversity poses a pedagogical and social challenge to teachers. Sova and Kemperl (2012) conducted a study that focused on curricular reform of art education (i.e., visual art education). In terms of apparent components of the competence of cultural understanding and expression, it was predicted that students would gain an understanding of art, develop a capability to experience activities of art, and develop a creative attitude towards art. Qualitative investigation showed that, despite the transformation, the curriculum for arts education did not include the competence of cultural awareness and expression, especially in conceptual structure of the curriculum.

Art education is centered principally on art-making activities. The integration of arts subjects in school curriculum, as offered by the White Paper, is therefore not possible, due to the current standard of art education. From a practical estimation, the analysis also raised the question of the experience and competences of teachers (Sova & Kemperl, 2012). According to Kehus (personal communication, April 12, 2016), teachers have to be open to new experiences. Kehus further emphasized that cultural competence exists on a continuum; that is, individuals will not wake up and suddenly become culturally competent. Rather, they gain skills and experiences that increase their cultural competence. For example, Kehus said, “I am more culturally competent than I was 10 years ago, but I am not perfect” (personal communication, April 12, 2016).

According to Chisholm (1994), teaching efficiently in culturally diverse classrooms refers to using culturally sensitive schemes and content to guarantee equitable opportunities for academic achievement, individual development, and individual self-realization for all students. Chisholm suggested that educators need to be "knowledgeable about how minority children perceive the world and process and organize information” (p. 65). Above all, teachers have to know how to adjust the content, instruction, and presentation style to students’ cultural and individual preferences. Curriculum, methodology and resources should allow students to identify with the educational activity and allow them to function cognitively. According to Chisholm (1994), cultural competence consists of a variety of skills:

“Pedagogically, cultural competence includes the ability to discern bias in print and nonprint materials; the ability to plan for and provide instruction that accommodates for cultural differences; skill in cross-cultural classroom management; skill in providing for differences in English language competency; and flexibility to provide for cultural preferences in use of time, space, social interaction, and physical contact (p. 66)”.

I think most of these skills are directly observable, especially during art activities.

In addition, Kehus (personal communication, April 12, 2016), indicated that art is important in exploring individuals within a culture. For example, Kesner (2006) suggested that cultural competence has long been recognized as an essential prerequisite for culture consumption, such as visiting a museum. Researchers also have argued that museum visitors should be educated to view art in a contemplative manner rather than in a narrow task-oriented or goal-directed manner. The questions of “looking” and experiencing lead straight into some of the most complicated issues of contemporary mind and brain sciences, as well as into the possibility of their intersections with the museum. According to Seligmann (2014), teachers are important resources who can significantly contribute to knowledge sharing within the educational departments of museums, allowing students to develop their professional and pedagogical competencies and strengthen museum teaching practices on the whole.

However, several problems exist related to multicultural competence among educators in the field of education (personal communication, April 12, 2016). According to Taylor and Alston (2008), the problem essentially focuses on cultural competency and teachers’ skills. As classroom directors and deliverers of instruction, some teachers within urban districts lack cultural consciousness. Taylor and Alston (2008) have suggested that one out of every four or five American students has been stressed, intimidated, or molested for reasons related to their group affiliation. Sadovnik and Semel (2010) argued that the method in which children are educated today will not prepare them for productive and justifying lives in the future. For example, urban schools have failed to teach minority and poor children, and differences between schools and teaching strategies have reinforced existing inequalities (p.132).
Additionally, teachers usually do not move outside of their comfort zone and explore their students’ identities beyond the classroom. Lai (2012) suggested that culturally responsive teachers resisted contextualized learning that disengages students from their ethnicity and culture. Teachers usually practice learning activities by incorporating students’ home language, sociocultural schemas, artistic expression, and life experiences. However, in the era of globalization, culturally skilled art teachers must understand that global forces necessarily affect students’ family culture, including local artistic expression. Teachers should attempt to engage with students’ values, issues of globalization, and the influence of globalization on their community culture and art.

Along the same line, Leong (2014) has directed attention to the problem of cultural mismatch in education. Leong has argued that matching (a) students' knowledge, culture, and values from their family with (b) school values is an important step in working toward educational success. Leong indicated that the greater the gap between the family and school cultures, the less likely children would benefit from schooling. But the problem is not limited to the differences between home cultures and school cultures; rather, it can be present in other kinds of mismatches, such as mismatches between western and eastern cultures as well as between traditional and modern cultures. Bequette and Hrenko (2011) argued that culture-based arts integration recognizes the matching of school life and home life. Their study focused on Project Intersect, which was implemented by teachers who inspired cultural arts experiences. This project opened up new ways of learning and communication in classrooms as well as the communities in which students live.

Most teachers focus on their academic skills more than their cultural competence capacities. Landa (2011) has argued that teachers need to use different skills to strike a balance between the demands of standardized testing and the issues of cultural diversity. They have to ensure that students are able to succeed on standardized tests and that they also are able to understand the multicultural communities around them. Furthermore, Edgar and Day-Vines (2002) indicated that current school reform movements are at risk regarding standard tests. The authors provided two recommendations for teaching U.S. students. First, they advocated that democratic education and cultural competency must be included in the primary goals of schooling. Second, they proposed that the purpose of schooling should be defined through public reflection regarding diverse communities. According to Bequette and Hrenko (2011), culture-based arts integration is one pathway to making school a more engaging community for students and a place in which to develop cultural awareness and sensitivity in all students. However, teachers who participated in Project Intersect indicated a desire to involve more art and culture in their classrooms but felt challenged to do so because it was difficult and time-consuming. In addition, there was little financial support for resources and/or institutional support for continuing culturally responsive teaching.

According to Kehus (personal communication, April 12, 2016), one of the critical needs in the schools is what I refer to as a “mirror and window,” and it may be helpful for art too. First, classrooms should be a mirror, so the literature used in a classroom should reflect the culture of students kids in that classroom. Therefore, teachers should use materials that reflect the cultures of students in their classrooms. According to Kehus (personal communication, April 12, 2016), in the 1960s, for example, teachers would have African American students read inappropriate books that did not reflect their culture. Secondly, if teachers use only literature or art, that is a problem too. According to Kehus (personal communication, April 12, 2016), in addition to a mirror, the classroom should be a window into the world. Therefore, sometimes teachers should use materials that reflect diverse cultures, so art may serve as a window to the world. It shows students that there are people of different colors and that another use of art and literature is to highlight diversity.

The theoretical framework, as distinct from theory, is usually considered a paradigm and affects the way knowledge is investigated and described (Mackenzie & Knipe, 2006). It is the choice of the paradigm that identifies, shapes, and clarifies the purpose, motivation, and expectations for the research (Mackenzie & Knipe, 2006). A framework also is required to discuss the differences between philosophies underlying the quantitative and qualitative research approaches (Hathaway, 1995). As Highfield and Bisman (2012) have described the constructivism paradigm within qualitative approach:

Constructivism is not embedded within a materialist or physical meta-view (ontology) of the world. The belief in, and acceptance of, multiple social realities leads to the conclusions that knowledge is relativistic (that is, knowledge and realities are time, space and context dependent), inquiry should be naturalistic, and that interpretivism (rather than
scientific methods and empiricism) is the appropriate frame through which to bring to light and explore these realities (p. 6).

I realize that adopting a constructivist approach and qualitative approach enables me to provide meaning to the method of teaching, and to distinguish factors that otherwise could not be easily displayed or illustrated through metrics and statistics, nor generalized across entire populations. In this approach, I can also introduce valuable content into social structures and art activities by using a flexible and open-minded strategy. While this approach may not be a key catalyst for transformation, illuminating these diverse realities may provide multiple answers rather than singular, one-size-fits-all solutions (Highfield & Bisman, 2012).

According to my research, the theoretical framework depends on three theories: (a) aesthetic experiences theory, (b) multicultural theory, and (c) funds of knowledge theory. I argue that these theories fit under an overarching constructivist research paradigm within a qualitative approach. The first argument is that while epistemology addresses how we come to know reality, Mojtahed and Peng (2014) indicated that the constructivist approach to inquiry is based on understanding the universe of human activities. This system of experiences is continuously formed through human communication with subjects and other materials, and it is the reason that aesthetic experience theory, multicultural theory, and funds of knowledge theory support my research. First, aesthetic experience theory indicates that arts are educational and that they open the gateway to an expansion of meaning and an increased potential to experience the world (Dewey, 1934). Also, Dewey's aesthetic experience theory in education is extremely important in exploring aesthetic experience in a way that allows understanding of the primary meaning of the experience itself (Puolakka, 2014). I believe that aesthetic theory provides an excellent framework to explore reality. It allows me to explore and understand how teachers use different materials and design their teaching strategies in creative ways because aesthetic experience strategies require us to see and think about the reality of the world in unique ways (Girod & Schepige, 2003).

In the same way, Genzuk (1999) has indicated that the funds of knowledge theory also encourages self-exploration when educators actively adopt family and community resources to build meaning and to define their own reality. This frame of research studies households' social histories, methods of thinking and learning, and practical skills associated with a community's everyday life, particularly their labor and language, and attempts to derive instructional innovations and insights from such an analysis (Esteban-Guitart & Moll, 2014).

In addition to aesthetic experience theory and funds of knowledge theory, multicultural education theory focuses on knowledge construction and the orientation that cultural frameworks shape the identification and interpretation of educational content (Zirkel, 2008). As a result, multicultural theory encourages the school system to embrace a variety of new materials and positions toward current curricula, teaching procedures, and pedagogical strategies that meet the needs of traditionally underrepresented groups (Cumming-McCann, 2003). Accordingly, Ponterotto (2005) indicated that constructivism highlights the subjective interrelationship between the researcher and participants of a study as well as the construction and application of theories.

I also argue that epistemological qualitative constructivist approaches to research have the purpose of understanding "the world of human experience" and advocate that reality is socially constructed (Mackenzie& Knipe, 2006). To access and produce an understanding regarding human attitudes, one of the main requirements of the constructivist strategy is the establishment of a correlative and communication ground between the research design participants and researchers in the co-construction of these applications (Mojtahed & Peng 2014). These applications successfully integrate with aesthetic experience theory, multicultural theory, and funds of knowledge theory. For example, Dewey’s aesthetic experience is a transactional occurrence in which both the person and the world are changed (Wong, 2007). I think the link between both aesthetic experiences and educational experiences can transfer new thoughts, feelings, and actions through the function of art. As a researcher, I can engage with teachers to examine their cultural competence attitudes through art activities. Goldblatt (2006) indicated that art is intended to help individuals understand cultures from which the work is created. Building on this, I believe that aesthetic experience theory could play a role as significant as the funds of knowledge theory through the lens of art activities. In similar fashion, “funds of knowledge” refers to historically developed and accumulated approaches, such as skills, abilities, beliefs, practices, and forms of knowledge (Gonzalez, 1993). Funds of knowledge theory focuses on the results of individuals’ lived experiences. It involves their social interaction, their contribution in multiple tasks, and their different skills-related
activities (Esteban-Guitart & Moll, 2014). In like manner, multicultural theory is a transformative approach that helps educators to understand the world from several different cultural and ethnic perspectives (Cumming-McCann, 2003). Zirkel (2008) has indicated that knowledge construction, as a part of multicultural theory, makes more requests on educators than content integration in that it demands a more thorough reorganizing of the curriculum. Knowledge construction requests that we as educators go deeper into our analysis of the curriculum and to carefully consider how we choose which experiences are considered knowledge and how we shape or structure those experiences (Zirkel, 2008). Accordingly, the constructivist position supports a hermeneutical method, which maintains that reality is hidden and must be produced from “inside” to “outside” through deep thought (Ponterotto, 2005). According to my research, I believe that the constructivist paradigm can be understood as an alternative to the “received view” through aesthetic experience theory, multicultural theory, and funds of knowledge theory. Constructivism and these theories imply a relativist position that assumes various and equally valid realities. According to Ponterotto (2005), constructivists held that reality is constructed in the desire of the individual, rather than it being an externally unique entity. Ultimately, this would lead to developing a theory that is based on the experiences of researchers and that of research participants (Mojtahed & Peng 2014).

Finally, I argue that throughout the research process, the constructivist researcher is most predisposed to trust qualitative data collection methods and analysis (Mackenzie & Knipe, 2006). The goal of a constructivist paradigm and constructivist theories focuses on how people understand the world within human activities and acquire experiences during interaction with a particular event or other individuals. Ponterotto (2005) indicated that the goal of constructivism is to understand the “lived experiences” that happen within a historical, social reality. Also, lived experiences may be outside the direct recognition of individuals but could be brought into awareness. In the same way, Dewey emphasized that “to understand aesthetics in its ultimate and approved forms, we must begin with it in the raw; in events and senses that attract our eye and ear, moving our interest and affording us enjoyment as we look and listen” (p. 4-5). Goldblatt (2006) explained Dewey’s point that “making and finding meaning through art is a transformative experience, continuing connections with what is good and right” (p. 17). Likewise, Cumming-McCann (2003) indicated that multicultural education suggests that educational systems suffer from a variety of oppressions that must be remedied by using multicultural education. Cumming-McCann further emphasized that this theory encourages the school system to embrace a variety of new materials and positions toward current curricula, teaching procedures, and pedagogical strategies that meet the needs of traditionally underrepresented groups.

Building on these ideas, teachers can flexibly use art activities under the umbrella of multicultural education. For example, a transformative approach helps teachers allow students to see concepts from several different cultural and ethnic perspectives. Accordingly, teachers who use art activities can enhance their cultural competence by giving students the opportunity to participate in equitable education (Cumming-McCann, 2003). In addition, the funds of knowledge theory is an appropriate lens through which to explore cultural competence and art activities because it provides a variety of techniques to detect funds of knowledge (Esteban-Guitart & Moll, 2014). By the same token, the funds of knowledge theory embodies a new and vital cultural process that can be provided by teachers to help students understand cultural equality (Genzuk, 1999). Also, aesthetic theory allows the researcher to use artistic experiences to create funds-of-knowledge activities. These activities have been historically and culturally expanded to allow teachers and students to interact with a particular culture (Genzuk, 1999). Moreover, some of the studies in this field have used ethnographic techniques, visual methods, graphic elicitation, and arts-based methods to detect funds of knowledge (Esteban-Guitart & Moll, 2014). Therefore, I believe that constructivist and qualitative research methodology is a reasonable method in that it suggests a different approach to thinking about topics, problems, and assumptions because the researcher is an active member, not a passive observer (Savenye & Robinson, 1996).
REFERENCES


technologists. *Handbook of research for educational communications and technology*, 1171-1195


Author requested nothing in proceedings.
Automated Assessment: Developing A Community Of Collaboration

Dr. Dirk Davis, California Baptist University, USA
Dr. Kathryn Norwood, California Baptist University, USA

ABSTRACT

A university approach to collecting data for the purpose of assessing student learning using an automated assessment program is presented. Assessment of student learning outcomes is one of the most challenging aspects of determining effectiveness of course design and delivery. Obtaining ownership from faculty for the value of assessment is even more challenging. This private liberal arts university had the opportunity to build in assessment procedures from the ground up during the past five years. Initial development of the assessment process for each course, degree program, and university level outcome beginning by using manual processes for collecting data are outlined. The authors present how transitioning to an automated assessment process has developed a collaborative community for all stakeholders involved in assessment. In addition, the authors will offer examples of specific assessment building procedures when designing an undergraduate and graduate course.
E-Mentorship: Providing Support To Non-Traditional Learners

Dr. Kathryn Norwood, California Baptist University, USA
Dr. Dirk Davis, California Baptist University, USA
Elisabeth Knopp, California Baptist University, USA
Rhonda Moll, California Baptist University, USA
Shannon Davis, California Baptist University, USA

INTRODUCTION

California Baptist University (CBU) is a comprehensive, liberal arts university located in Riverside, California. Founded in 1950 by the Southern Baptist Convention, the one-time college (university status gained in 1998) has grown to 11 colleges, schools, or divisions offering 72 bachelor degree programs with 150 major concentrations and 47 minors, 25 master degree programs with 45 concentrations, and 3 doctoral programs, with a total enrollment of 9,157 students (as of Fall 2016). While the specific verbiage of CBU’s mission statement may have changed since the original 1950 version, the actual mission remains largely the same. California Baptist University believes each person has been created for a purpose. CBU helps students understand and engage this purpose by providing a Christ-centered educational experience that integrates academics with spiritual and social development opportunities. Graduates are challenged to become individuals whose skills, integrity and sense of purpose glorify God and distinguish them in the workplace and in the world. The University seeks to provide academic programs that prepare students for professional careers, as well as co-curricular programs that foster an environment supporting the intellectual, physical, social and spiritual development of each student. Upon completion of a degree program, each student at California Baptist University should be able to:

- Demonstrate spiritual literacy, including Biblical Christian faith and practice, Baptist perspectives, and the Christian's role in fulfilling the Great Commission.
- Respect diverse religious, cultural, philosophical, and aesthetic experiences and perspectives.
- Use critical thinking skills to demonstrate literacy: listening, speaking, writing, reading, viewing, and visual representing.
- Demonstrate competence in mathematical, scientific, and technological skills.
- Transfer academic studies to a profession and the workplace.
- Implement a personal and social ethic that results in informed participation in multiple levels of community.

The Division of Online and Professional Studies (OPS) was conceived in 2010 to better serve non-traditional students primarily seeking a distance learning environment (hybrid or online). Additionally, OPS provides traditional students the benefit of taking up to two online courses per semester, at a reduced rate, in order to expedite their time to degree completion. The separate division has complete oversight of faculty and curriculum, and operates largely independent from its traditional, main campus counterparts, while it remains under the control of CBU’s President and Board of Trustees. The OPS division launched with 12 undergraduate degrees in 2010, and as of Fall 2016 offered 18 undergraduate degrees, 10 graduate degrees, and 2 doctorates. Within many of the previously listed degrees are multiple concentrations and specializations.

The Online and Professional studies division of California Baptist University undergraduate program maintains a 70% first year retention rate and the graduate programs maintain an 87% retention rate. The evidence indicated the majority percentage of our non-retained students was due to academic suspension. Students were experiencing challenges which caused below standard academic achievement resulting in Academic Suspension. Though students were given the opportunity to appeal their Academic Suspension, there were no systems in place to address the challenges that resulted in the student’s initial suspension, resulting in being academically disqualified from taking any future courses.
Beyond Relational Databases
Jerzy Letkowski, Western New England University, USA

ABSTRACT

Standard business data structures are usually well handled by relational database systems. As long as data can be captured as tables, they can be stored and processed efficiently by a relational database management system (RDBMS). Commercial (Oracle, DB2, MS SQL Server, etc.) and open source (MySQL, PostgreSQL, Firebird, VoltDB, etc.) systems are available to meet basic data processing needs. The recent explosion of Internet data, known as Big Data, featuring extremely large volume and non-relational structures, gave rise to new data models and processing techniques. This presentation focuses on data storage and query languages dedicated to data expressed in SQL (Structured Query Language), XML (Extensible Markup Language), RDF (Resource Description Framework) and JSON (JavaScript Object Notation). In order to better understand similarities and differences between these languages, a common data set is utilized. The structure of this data set is defined generically in UML (Unified Modeling Language).

Keywords: Database, Query, Ontology, SQL, XML, RDF, JSON, UML

Workshop Presentation Outline

1. Software Requirements
   a. MySQL
   b. BaseX
   c. Apache Jena
   d. Couchbase
2. Data Model (an UML diagram).
   a. Problem Definition
   b. Conceptual Design
   c. Entity Relation Diagram (UML)
3. Relational Database
   a. Data Definition (SQL DDL)
   b. Data Retrieval (SQL DML)
4. XML Database
   a. Data Definition (XML Documents)
   b. Data Retrieval (XQuery)
5. RDF Database
   a. Data Definition RDF (TTL) Documents
   b. Data Retrieval (SPARQL)
6. JSON Database
   a. Data Definition (JSON DDL)
   b. Data Retrieval (N1QL DML)
7. Summary
1. SOFTWARE REQUIREMENTS

This workshop presentation shows how SQL, XML, RDF and JSON data structures can be used to solve the same query problems. The following software is utilized:

1.1 SQL

MySQL

“MySQL is the world's most popular open source database. MySQL Community Edition is the freely downloadable version of the world’s most popular open source database.” (MySQL 2016). Setup programs are available for different OS platforms at: https://www.mysql.com/downloads/.

The installation procedure is simple. Additionally, it is recommended that the bin folder (a sub-folder of the systems home folder) be added to the operating system’s PATH. Both GUI and command-line frontends are available.

1.2 XML

BaseX

“BaseX is a light-weight, high-performance and scalable XML Database engine and XPath/XQuery 3.1 Processor, which includes full support for the W3C Update and Full Text extensions. An interactive and user-friendly GUI frontend gives you great insight into your XML documents.” (BaseX 2016) Setup programs are available for different OS platforms at: http://basex.org/products/download/all-downloads/.

Again, the installation procedure is simple. An integrated GUI frontend is automatically installed.

1.3 RDF

Apache Jena

“A free and open source Java framework for building Semantic Web and Linked Data applications.” (Apache Jena 2016) Setup programs are available for different OS platforms at: https://jena.apache.org/download/index.cgi

There are two installation options ():

- **Apache-Jena** installs the APIs, SPARQL engine, the TDB native RDF database and command line tools.
- **Apache-Jena-Fuseki** installs the Jena SPARQL server and a Web browser’s GUI.

This presentation uses Apache Jena and its command line user interface (frontend). Also with this software, it is recommended that the bin folder (a sub-folder of the Jena’s home folder) be added to the system’s PATH.

1.4 JSON

Couchbase

“Couchbase Server is a NoSQL document database with a distributed architecture for performance, scalability, and availability. It enables developers to build applications easier and faster by leveraging the power of SQL with the flexibility of JSON.” (Couchbase 2016). Setup programs available for different OS platforms at: http://www.couchbase.com/nosql-databases/downloads.

The Community edition is free to everyone. The Enterprise edition is free for educational purpose. Additional extensions and tools are available.
The setup program installs the Couchbase server and two end-user frontends (Web and command line).

This presentation uses the above programs installed on a Windows 10 computer.

2. DATA MODEL

A manager of an online hobby club wants to track hobbies of the club’s members. To keep thing simple, she developed a UML model that includes only very basic information about the members and their hobbies. Thus the model consists of two entities: Member and Hobby. Each instance of entity Member is uniquely identified by its ID (mid) and it features only two attributes: given_name and family_name. Each instances of entity Hobby includes its ID (hid) and name. The manager also assumed that each member may declare only one hobby.

Figure 1 shows an UML representation of this conceptual design.

![Figure 1. A UML Data Model.](image)

Notice that this UML model represents a pure relational data model. Each entity has a primary key and other relevant attributes. The relationship between the entities defines implicitly a foreign key. The entity at the many side (1..*) of the “has” relationship will have the foreign key spawned by the primary key of the entity at the one (1) side of the relationships. Figure 2 shows the same model in MySQLWorkbench.

![Figure 2. A MySQLWorkbench (relational) version of the data model.](image)

The relational data model exposes the foreign key (Member.hid) that connect members to their hobbies (Hobby.hid).

3. RELATIONAL DATABASE

MySQL Workbench has a capability for transforming the data model (Figure 2) to a physical database (MySQL Workbench 2016). The following SQL script is a simplified (edited) version of such a transformation:

3.1 Data Definition (SQL – DDL, implemented in MySQL)

```
DROP DATABASE IF EXISTS HobbyDB;
CREATE DATABASE HobbyDB;
USE HobbyDB;
```

CREATE TABLE Hobby(
    hid INT PRIMARY KEY,
    name VARCHAR(64)
);

CREATE TABLE Member(
    mid INT PRIMARY KEY,
    given_name VARCHAR(32),
    family_name VARCHAR(64),
    hid INT,
    FOREIGN KEY(hid) REFERENCES Hobby(hid)
);

Sample records are provided by the following SQL statements:

Insert into Hobby(hid,name) Values
(1,'Stamps'),(2,'Travel'),(3,'Golf');

Insert into Member(mid,given_name,family_name,hid) Values
(1,'Joe','Joener',3), (2,'Pat','Patton',2), (3,'Ben','Benek',2),
(4,'Ann','Annar',1), (5,'Kim','Kimsky',3), (6,'Tom','Tomson',3),
(7,'Zak','Zaker',3);

3.2 Data Retrieval

3.2.1 Simple Queries

3.2.1.1 Query Example: “Show all hobbies”:

SQL Query:

```
SELECT *
FROM Hobby;
```

Query Result:

```
+-----+--------+
| hid | name   |
+-----+--------+
|  1  | Stamps |
|  2  | Travel |
|  3  | Golf   |
+-----+--------+
```

3.2.1.2 Query Example: “Show all members”:

SQL Query:

```
SELECT *
FROM Member;
```
Query Result:

<table>
<thead>
<tr>
<th>mid</th>
<th>given_name</th>
<th>family_name</th>
<th>hid</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Joe</td>
<td>Joener</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Pat</td>
<td>Patton</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Ben</td>
<td>Benek</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Ann</td>
<td>Annar</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Kim</td>
<td>Kimsky</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>Tom</td>
<td>Tomson</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>Zak</td>
<td>Zaker</td>
<td>3</td>
</tr>
</tbody>
</table>

3.2.1.3. Query Example: “Select member(s) having last name Patton”:

SQL Query:

```sql
SELECT *
FROM Member
WHERE family_name = 'Patton';
```

Query Result:

<table>
<thead>
<tr>
<th>mid</th>
<th>given_name</th>
<th>family_name</th>
<th>hid</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Pat</td>
<td>Patton</td>
<td>2</td>
</tr>
</tbody>
</table>

3.2.2 Complex Queries

3.2.2.1. Query Example: “Show all members and their hobby information”:

SQL Query:

```sql
SELECT *
FROM Member JOIN Hobby USING(hid);
```

This query is equivalent to:

```sql
SELECT *
FROM Member, Hobby
WHERE Member.hid = Hobby.hid;
```

Query Result:

<table>
<thead>
<tr>
<th>hid</th>
<th>mid</th>
<th>given_name</th>
<th>family_name</th>
<th>name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>Ann</td>
<td>Annar</td>
<td>Stamps</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Pat</td>
<td>Patton</td>
<td>Travel</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>Ben</td>
<td>Benek</td>
<td>Travel</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Joe</td>
<td>Joener</td>
<td>Golf</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>Kim</td>
<td>Kimsky</td>
<td>Golf</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>Tom</td>
<td>Tomson</td>
<td>Golf</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>Zak</td>
<td>Zaker</td>
<td>Golf</td>
</tr>
</tbody>
</table>
3.2.2.2. Query Example: “Show names of members whose hobby is Golf”:

SQL Query:

```
SELECT Member.given_name AS golferGivenName, Member.family_name AS golferFamilyName
FROM Member JOIN Hobby USING(hid)
WHERE Hobby.name='Golf';
```

Query Output:

```
+-----------------+------------------+
<table>
<thead>
<tr>
<th>golferGivenName</th>
<th>golferFamilyName</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joe</td>
<td>Joener</td>
</tr>
<tr>
<td>Kim</td>
<td>Kimsky</td>
</tr>
<tr>
<td>Tom</td>
<td>Tomson</td>
</tr>
<tr>
<td>Zak</td>
<td>Zaker</td>
</tr>
</tbody>
</table>
+-----------------+------------------+
```

4. XML DATABASE

XML databases consist of XML documents which are plain-text document written in XML (eXtensible Markup Language)—an official recommendation of W3C.

4.1 Data Definition (XML Documents)

Relational data can be easily transformed into other formats. MySQL can do it at the command line (mysql -u root -p --xml) or in MySQL Workbench. Figure 3 show how to export table Hobby to an XML document in MySQL Workbench.

![Figure 3. Exporting table Hobby to an XML document.](image)
First, open the database and type the query (SELECT * FROM Hobby;). Second, click the execute button. The result set is shown in the Result Grid. Third, click the Export button. My SQL Workbench will open a Save As dialog box. All you need is to change the type of the document to XML. The following XML document was generated (saved as hobby.xml):

```xml
<?xml version="1.0" encoding="UTF-8"?>
<resultset statement="SELECT * FROM Hobby;">
  <row>
    <field name="hid">1</field>
    <field name="name">Stamps</field>
  </row>
  <row>
    <field name="hid">2</field>
    <field name="name">Travel</field>
  </row>
  <row>
    <field name="hid">3</field>
    <field name="name">Golf</field>
  </row>
</resultset>
```

Using a few editing operations this document was converted to a simpler format:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<Hobby_Set>
  <Hobby hid="1"><name>Stamps</name></Hobby>
  <Hobby hid="2"><name>Travel</name></Hobby>
  <Hobby hid="3"><name>Golf</name></Hobby>
</Hobby_Set>
```

In a similar way table Member was transformed into XML document (member.xml):

```xml
<?xml version="1.0" encoding="UTF-8"?>
<Member_Set>
  <Member mid="1" hid="3">
    <given_name>Joe</given_name><family_name>Joener</family_name>
  </Member>
  <Member mid="2" hid="2">
    <given_name>Pat</given_name><family_name>Patton</family_name>
  </Member>
  <Member mid="3" hid="2">
    <given_name>Ben</given_name><family_name>Benek</family_name>
  </Member>
  <Member mid="4" hid="1">
    <given_name>Ann</given_name><family_name>Annar</family_name>
  </Member>
  <Member mid="5" hid="3">
    <given_name>Kim</given_name><family_name>Kimsky</family_name>
  </Member>
  <Member mid="6" hid="3">
    <given_name>Tom</given_name><family_name>Tomson</family_name>
  </Member>
  <Member mid="7" hid="3">
    <given_name>Zak</given_name><family_name>Zaker</family_name>
</Member_Set>
```
An interesting assignment for students would be to use XSLT to perform such editing (XSLT 2016). The two XML document can now be used to create XML databases in BaseX.

Start BaseX and open two databases named as hobby and member. For each XML document, use the Database > New menu-command, name the database, and navigate to its XML document. You may also wish to open the folder in the Navigation panel to have easy access to the XML document. Figure 4 shows BaseX with the hobby.xml and member.xml documents opened as databases hobby and member. They have been stored originally in folder C:\data\xml\hobby. This document’s folder is shown at the top of the navigation panel (Figure 4, the top-left panel). The Editor panel is used to write XQuery statements. The outcomes of the statements are shown in the Result panel.

4.2 Data Retrieval

XQuery is a language used for retrieving data from XML documents. It is built on XPath expressions and it acts in a similar way to SQL. It is officially supported (recommended) by W3C.

According to Wikipedia, “XQuery (XML Query) is a query and functional programming language that queries and transforms collections of structured and unstructured data, usually in the form of XML, text and with vendor-specific extensions for other data formats (JSON, binary, etc.). The language is developed by the XML Query working group of the W3C. The work is closely coordinated with the development of XSLT by the XSL Working Group; the two groups share responsibility for XPath, which is a subset of XQuery.” (XQuery 2016)
The next section shows examples of XML queries that do the same job as the SQL queries shown in section 3.

4.2.1 Simple Queries

Simple XQuery statements (queries) can [typically] be defined as XPath expressions. XPath is a language that takes advantage of the tree structure of XML documents (XPath 2016). Conceptually, it is similar to the file Path in a file system or to the HTTP reference (URL) of the World Wide Web.

Navigating through the XML tree structure starts at the root of the tree (/) and follows the Parent/Child relationships. For example, names of hobbies in document hobby.xml can be accessed as /Hobby_Set/Hobby/name. In an unambiguous situation, one could use shortcut //name (any name node, anywhere in the document).

4.2.1.1. Query Example: “Show all hobbies.”

Before running the query, make sure that the right database is opened. If necessary, use menu-command Database > Open & Manage . . . and select database hobby.

XQuery (XPath) Statement:

```
*/
```

If database (document) hobby is not current (opened), the statement must explicitly referenced the document:

```
doc("hobby")*/
```

Query Result:

```
>Hobby_Set>
    <Hobby hid="1"/>name>Stamps</name></Hobby>
    <Hobby hid="2"/>name>Travel</name></Hobby>
    <Hobby hid="3"/>name>Golf</name></Hobby>
</Hobby_Set>
```

This query shows the root node (Hobby_Set) and all its children. In this case, it works since the only children of the root element are the Hobby elements. The same output can be obtained, using this XPath query (show all Hobby elements and their descendants; element Hobby can be located anywhere in the document):

```
//Hobby
```

This query generates the following output:

```
>Hobby hid="1"/>name>Stamps</name></Hobby>
    <Hobby hid="2"/>name>Travel</name></Hobby>
    <Hobby hid="3"/>name>Golf</name></Hobby>
```

Notice that this XPath output shows a fragment of the XML document. Thus, wherever XQuery uses pure XPath, it results in an XML fragment.

4.2.1.2. Query Example: “Show all members.”

Before running the query, make sure that the right database is opened. If necessary, use menu-command Database > Open & Manage . . . and select database member.
XQuery (XPath) Statement:

```
/Member_Set/*
```

Query Result:

```
<Member mid="1" hid="3">
  <given_name>Joe</given_name><family_name>Joener</family_name>
</Member>
<Member mid="2" hid="2">
  <given_name>Pat</given_name><family_name>Patton</family_name>
</Member>
```

Notice that, in order to conserve the space, only the two fist elements of the entire result set are shown.

### 4.2.1.3. Query Example: “Select member(s) having last name Patton.”

XQuery Query:

```
//Member[family_name='Patton']
```

Query Result:

```
<Member hid="2">
  <given_name>Pat</given_name>
  <family_name>Patton</family_name>
</Member>
```

SQL uses SELECT and WHERE clauses. In XPath they are implied. The query itself is a SELECTION. In the example, the WHERE clause is implemented *silently* by the equality condition enclosed between square brackets.

### 4.2.2 Complex Queries

#### 4.2.2.1. Query Example: “Show all members and their hobby information.”

XQuery query:

```
let $mdoc := doc("member")
let $hdoc := doc("hobby")
for $mem in $mdoc//Member, $hob in $hdoc//Hobby
  where $mem/@hid = $hob/@hid
  order by $hob/name
return
<info
  hid = "{$mem/@hid}" hobby = "{$hob/name}"
  mid = "{$mem/@mid}"
  member = "{$mem/given_name} {"$mem/family_name}"
/>`
```
Query Result:

```xml
<info hid="3" hobby="Golf" mid="1" member="Joe Joener"/>
<info hid="3" hobby="Golf" mid="5" member="Kim Kimsky"/>
<info hid="3" hobby="Golf" mid="6" member="Tom Tomson"/>
<info hid="3" hobby="Golf" mid="7" member="Zak Zaker"/>
<info hid="1" hobby="Stamps" mid="4" member="Ann Annar"/>
<info hid="2" hobby="Travel" mid="2" member="Pat Patton"/>
<info hid="2" hobby="Travel" mid="3" member="Ben Benek"/>
```

This query uses a syntax referred to as **FLOWR**:

- **F**: For - A loop
- **L**: Let - An assignment
- **O**: Order by - Sorting
- **W**: Where - Logical expression (filter)
- **R**: Return - Query result

The **JOIN** condition is specified in this query by the **where** clause, making sure that the primary key (**hid**) in the **Hobby.xml** document is matched by the foreign key (**hid**) in the **Member.xml** document. Notice that, unlike names of the XML elements, attributes of the elements are prefixed with character @. XQuery variables have names prefixed with “$”. The dynamic (variable) elements of the output (**return**) are enclosed between curly braces ({ …}).

### 4.2.2.2. Query Example: “Show names of members whose hobby is Golf.”

**XQuery query:**

```xml
let $mdoc := doc("member")
let $hdoc := doc("hobby")
for $mem in $mdoc//Member, $hob in $hdoc//Hobby
where $mem/@hid = $hob/@hid and $hob/name = "Golf"
order by $hob/name
return <golfer
mid = "{$mem/@mid}"
member = "{$mem/given_name} {$mem/family_name}"/>
```

**Query Result:**

```xml
<golfer mid="1" member="Joe Joener"/>
<golfer mid="5" member="Kim Kimsky"/>
<golfer mid="6" member="Tom Tomson"/>
<golfer mid="7" member="Zak Zaker"/>
```

This query also uses the **FLOWR** syntax. It is similar to the previous one. The where clause also accounts for the hobby name being Golf (**and Shob/name = "Golf"**). The output is tagged as <golfer>. If one took into account that the golfers have hobby ID = 3 (**$mem/@hid = 3**) then this query can be performed on document member.xml only, using a pure XPath statement:

```
/Member_Set/Member[@hid="3"]
```

A shortcut of this statement would be //Member[@hid="3"], meaning: “show all Member elements, having attribute hid = 3.”
5. RDF DATABASE

RDF (Resource Description Framework) databases consist of RDF documents which are plain-text document written in RDF—another official recommendation of W3C (RDF 2016). Other languages that are based on RDF, like the Ontology Web Language (OWL 2016), can also be used.

An RDF document is a collection of statements of type SUBJECT + PREDICATE + OBJECT. Each of the elements of this triple is a resource that is uniquely identified, using URI (Universal Resource Identifier). URIs are frequently defined as URLs (Uniform Resource Locator). The URIs can but do not have to be Web accessible.

The main purpose of RDF is to describe resources that can be anything one can identify by an URI. Resources can have simple (atomic) or complex properties. RDF is expected to be processed predominantly by software rather than human agents. This is why its language is frequently referred to as machine readable (understandable) language.

An RDF statement is about a resource (SUBJECT) whose property (PREDICATE) has a value (OBJECT). Thus, the statement is a triple, for example (without URI/IRIs):

```
1 [given_name] Joe
```

This [triple] statement can defined, using the so called TTL format (Turtle 2016) as:

```
@prefix mem: <http://fun101.org/member#> .
@prefix foaf: <http://xmlns.com/foaf/0.1#> .

mem:1 foaf:given_name "Joe".
```

Such an abbreviated syntax will be used to express documents member.xml and hobby.xml in RDF. This notation uses prefixes to “specialize” resources semantically. Prefix mem identifies resources of type “member”. Prefix foaf is an official name space defined at the FOAF Vocabulary Specification site (FOAF 2016).

5.1 Data Definition (RDF Documents)

Using the TTL format, document hobby.ttl defines all the triples that are equivalent to the SQL table Hobby or to XML document hobby.xml:

```
# filename: hobby.ttl
@prefix hby: <http://fun101.org/hobby#> .

hby:1 a hby:Hobby .
hby:1 hby:name "Stamps" .
hby:2 a hby:Hobby .
hby:2 hby:name "Travel" .
hby:3 a hby:Hobby .
hby:3 hby:name "Golf" .
```

Each triple is terminated with a period (including the @prefix lines). Shortcut “a” stands for rdf:type. It is built into Jena’s RDF query (SPARQL) processor.
The Member objects (SQL records and XML elements) can be expressed in the TTL format as follows:

```ttl
# filename: member.ttl
@prefix foaf: <http://xmlns.com/foaf/0.1#> .
@prefix mem: <http://fun101.org/member#> .
@prefix hby: <http://fun101.org/hobby#> .

mem:1 a mem:Member .
mem:2 a mem:Member .
mem:3 a mem:Member .
mem:4 a mem:Member .
mem:5 a mem:Member .
mem:6 a mem:Member .
mem:7 a mem:Member .
mem:1 foaf:given_name "Joe" .
mem:2 foaf:given_name "Pat" .
mem:3 foaf:given_name "Ben" .
mem:4 foaf:given_name "Ann" .
mem:5 foaf:given_name "Kim" .
mem:6 foaf:given_name "Tom" .
mem:7 foaf:given_name "Zak" .
mem:1 foaf:family_name "Joener" .
mem:2 foaf:family_name "Patton" .
mem:3 foaf:family_name "Benek" .
mem:4 foaf:family_name "Annar" .
mem:5 foaf:family_name "Kimsky" .
mem:6 foaf:family_name "Tomson" .
mem:7 foaf:family_name "Zaker" .
mem:1 hby:hid hby:3 .
mem:3 hby:hid hby:2 .
mem:5 hby:hid hby:3 .
mem:6 hby:hid hby:3 .
mem:7 hby:hid hby:3 .
```

The first segment of 7 triples defines resources `mem:n` (n=1,2,…,7) of type `mem:Member` (as to say that each record belongs to table `Member`). The next two segments set the given and family names, respectively. The last segment define property hid being “equal” to the hobby resources. This segment is implementing informally the SQL foreign key constraints. From the SQL table definitions we learn that fields `Hobby.hid` and `Member.mid` are primary keys and `Member.hid` is a foreign key, referencing field `Hobby.hid`. Such relationships are simplified in RDF by binding resources of type `Member` with resources of type `Hobby`. Notice that the resources themselves serve here as unique identifiers. Fields `Member.mid` and `Hobby.hid` are not shown in these document explicitly as separate primary keys.

### 5.2 Data Retrieval

SPARQL is a language used for retrieving data from RDF documents. It is, a recursive acronym for SPARQL Protocol and RDF Query Language. It is an official recommendation of W3C (SPARQL 2016).
The basic structure of SPARQL resembles SQL:

```
SELECT ?var1, ?var2, . . .
WHERE {
   triple pattern 1 .
   triple pattern 12.
   . . .
}
ORDER BY . . .
```

The next section shows a few SPARQL queries that perform the same job as the SQL and XML queries shown in the previous sections.

### 5.2 Simple Queries

#### 5.2.1 Query Example: “Show all hobbies.”

Create a text document (getAllTriples.rq) containing the following SPARQL query (the # lines are [non-executable] comments):

```
# getAllTriples.rq
# arq --data hobby.ttl --query getAllTriples.rq
PREFIX hby: <http://fun101.org/hobby#>
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>

SELECT ?s ?p ?o
WHERE {
}
```

Save the document in the same folder as the RDF document to be queried (hobby.ttl). Open a Command window in the directory that contains both query and data source and run the following command:

```
arq --data hobby.ttl --query getAllTriples.rq
```

Jena produces the following output:

```
----------------------------------
<table>
<thead>
<tr>
<th>s</th>
<th>p</th>
<th>o</th>
</tr>
</thead>
<tbody>
<tr>
<td>hby:2</td>
<td>hby:name</td>
<td>&quot;Travel&quot;</td>
</tr>
<tr>
<td>hby:2</td>
<td>rdf:type</td>
<td>hby:Hobby</td>
</tr>
<tr>
<td>hby:1</td>
<td>hby:name</td>
<td>&quot;Stamps&quot;</td>
</tr>
<tr>
<td>hby:1</td>
<td>rdf:type</td>
<td>hby:Hobby</td>
</tr>
<tr>
<td>hby:3</td>
<td>hby:name</td>
<td>&quot;Golf&quot;</td>
</tr>
<tr>
<td>hby:3</td>
<td>rdf:type</td>
<td>hby:Hobby</td>
</tr>
<tr>
<td>--------</td>
<td>-----------</td>
<td>-----------</td>
</tr>
</tbody>
</table>
```

Jena returns a set of triples, utilizing the prefixes declared in both the data and query files. Because the SELECT variables are arranged in the WHERE clause as SUBJECT, PREDICATE, OBJECT, all the triples are returned.
5.2.1.2. Query Example: “Show all members, arranged in ascending order by the subject.”

Create a text document (getAllSortedTriples.rq) containing the following SPARQL query:

```sparql
# getAllSortedTriplesForMembers.rq
# arq --data member.ttl --query getAllSortedTriplesForMembers.rq
PREFIX foaf: <http://xmlns.com/foaf/0.1#>
PREFIX mem: <http://fun101.org/member#>
PREFIX hby: <http://fun101.org/hobby#>
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>

SELECT ?s ?p ?o
WHERE
  {?s ?p ?o .}
ORDER BY ?s
```

Save the document in the same folder as the RDF document to be queried (member.ttl). In the same Command window run the following command:

```
arq --data member.ttl --query getAllSortedTriples.rq
```

Jena produces the following output:

```
-----------------------------------------
<table>
<thead>
<tr>
<th>s</th>
<th>p</th>
<th>o</th>
</tr>
</thead>
</table>
-----------------------------------------
| mem:1   | hby:hid          | hby:3 |
| mem:1   | rdf:type         | mem:Member |
| mem:1   | foaf:given_name | "Joe" |
| mem:1   | foaf:family_name | "Joener" |
| mem:2   | hby:hid          | hby:2 |
| mem:2   | rdf:type         | mem:Member |
| mem:2   | foaf:given_name | "Pat" |
| mem:2   | foaf:family_name | "Patton" |
| mem:3   | hby:hid          | hby:2 |
| mem:3   | rdf:type         | mem:Member |
| mem:3   | foaf:given_name | "Ben" |
| mem:3   | foaf:family_name | "Benek" |
```

To conserve the space, only triples for members 1 and 2 are displayed. Notice that the ORDER BY clause is used in a similar way to SQL.

5.2.1.3. Query Example: “Select member(s) having last name Patton.”

SPARQL Query:

```sparql
# getPatton.rq
PREFIX foaf: <http://xmlns.com/foaf/0.1#>
PREFIX mem: <http://fun101.org/member#>
PREFIX hby: <http://fun101.org/hobby#>
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>

SELECT ?s
WHERE
  {?s "Patton" .}
```

Jena produces the following output:

```
-----------------------------------------
<table>
<thead>
<tr>
<th>s</th>
</tr>
</thead>
</table>
-----------------------------------------
| mem:2  |
| mem:3  |
```

To conserve the space, only triples for members 2 and 3 are displayed.
SELECT ?s ?p ?o
WHERE
{
    ?s foaf:family_name "Patton".
}

Query Result:
-----------------------------------------
<table>
<thead>
<tr>
<th>s</th>
<th>p</th>
<th>o</th>
</tr>
</thead>
</table>
-----------------------------------------
| mem:2  | hby:hid         | hby:2   |
| mem:2  | rdf:type        | mem:Member |
| mem:2  | foaf:family_name | "Patton" |
| mem:2  | foaf:given_name | "Pat"    |

Notice that the output is a set intersection of results produced by the individual triple patterns contained in the WHERE clause. Variables ?p (PREDICATE) and ?o (OBJECT) are combined with the ?s (SUBJECT) variable value that matched PREDICATE = foaf:family_name and OBJECT = "Patton".

5.2.2 Complex Queries

5.2.2.1. Query Example: “Show all members and their hobby information.”

SPARQL query:

```sparql
PREFIX foaf: <http://xmlns.com/foaf/0.1#>
PREFIX mem: <http://fun101.org/member#>
PREFIX hby: <http://fun101.org/hobby#>
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>

SELECT ?firstName ?lastName ?hobby
WHERE
{
    ?m foaf:given_name ?firstName.
    ?m foaf:family_name ?lastName.
    ?h hby:name ?hobby.
    ?m hby:hid ?h.
}
ORDER BY ?hobby
```

This query generates a set (?m) of SUBJECTs that match PREDICATES foaf:given_name and foaf:family_name in the member.ttl document as well as a set (?h) of SUBJECTs that match PREDICATE hby:name in the member.ttl document. The sets are then reconciled based on triples of the member.ttl document that contain PREDICATE hby:hid. Recall that the triples with PREDICATE hby:hid define the relationship between entity Member and entity Hobby.
Query Result:

```
<table>
<thead>
<tr>
<th>firstName</th>
<th>lastName</th>
<th>hobby</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Joe&quot;</td>
<td>&quot;Joener&quot;</td>
<td>&quot;Golf&quot;</td>
</tr>
<tr>
<td>&quot;Kim&quot;</td>
<td>&quot;Kimsky&quot;</td>
<td>&quot;Golf&quot;</td>
</tr>
<tr>
<td>&quot;Tom&quot;</td>
<td>&quot;Tomson&quot;</td>
<td>&quot;Golf&quot;</td>
</tr>
<tr>
<td>&quot;Zak&quot;</td>
<td>&quot;Zaker&quot;</td>
<td>&quot;Golf&quot;</td>
</tr>
<tr>
<td>&quot;Ann&quot;</td>
<td>&quot;Annar&quot;</td>
<td>&quot;Stamps&quot;</td>
</tr>
<tr>
<td>&quot;Ben&quot;</td>
<td>&quot;Benek&quot;</td>
<td>&quot;Travel&quot;</td>
</tr>
<tr>
<td>&quot;Pat&quot;</td>
<td>&quot; Patton&quot;</td>
<td>&quot;Travel&quot;</td>
</tr>
</tbody>
</table>
```

Notice that this query also contains a SORT BY clause.

5.2.2.2. Query Example: “Show names of members whose hobby is Golf.”

SPARQL query:

```
# golfers.rq
# arq --data member.ttl --data hobby.ttl --query golfers.rq
PREFIX foaf: <http://xmlns.com/foaf/0.1#>
PREFIX mem: <http://fun101.org/member#>
PREFIX hby: <http://fun101.org/hobby#>
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>

SELECT ?golferFirstName ?golferLastName
WHERE
{
  ?m foaf:given_name ?golferFirstName .
  ?m foaf:family_name ?golferLastName .
  ?h hby:name "Golf" .
  ?m hby:hid ?h .
}
```

The query is a special case of the previous query. The object variable (?hobby) of the previous triple, ?h hby:name ?hobby . is replaced by specific literal "Golf". The names of the SELECT variable are changed to better reflect the meaning of the query.

Query Result:

```
<table>
<thead>
<tr>
<th>golferFirstName</th>
<th>golferLastName</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Kim&quot;</td>
<td>&quot;Kimsky&quot;</td>
</tr>
<tr>
<td>&quot;Joe&quot;</td>
<td>&quot;Joener&quot;</td>
</tr>
<tr>
<td>&quot;Tom&quot;</td>
<td>&quot;Tomson&quot;</td>
</tr>
<tr>
<td>&quot;Zak&quot;</td>
<td>&quot;Zaker&quot;</td>
</tr>
</tbody>
</table>
```

SPARQL is a very powerful query language. It supports many of the functions that exist in SQL (sub-queries, GROUP By, outer joins, aggregate functions and more).
6. JSON DATABASE

JSON (JavaScript Object Notation) is an open-standard format that uses human-readable text to transmit data objects consisting of ATTRIBUTE-VALUE pairs (JSON 2016). JSON documents (like XML) are hierarchical. Each ATTRIBUTE (KEY) must be a quoted string. A VALUE can be any of data type such as String, Number, Boolean, JSON Object, Array, null.

Table 1. Three ways to specify a quadratic equation.

<table>
<thead>
<tr>
<th>English/Math</th>
<th>XML</th>
<th>JSON</th>
</tr>
</thead>
</table>
| A quadratic equation 
\((ax^2 + bx + c = 0)\) is defined by three parameters \((a, b\) and \(c)\), for example: 
\(5x^2 - 4x + 1 = 0\) | `<qEquation>`
`<parameter>`
`<a>5</a>`
`<b>-4</b>`
`<c>1</c>`
`</parameter>`
`</qEquation>` | { 
"qEquation": {
  "parameter": {
    "a":5,
    "b":-4,
    "c":1
  }
}

Table 1 shows three different ways to define a quadratic equation.

The first record of entity Hobby is defined in JSON as follows.

```
{
  "1": {
    "hid":1,
    "name": "Stamps"
  }
}
```

The [top] KEY, VALUE pair is: "1",{"hid":1, "name":"Stamps"}. At the lower level, there two KEY, VALUE pairs: "hid":1 and "name":"Stamps". Notice the KEY is always a string. VALUE is either a primitive value or [JSON] object.

Couchbase Server (Couchbase 2016) is used here to build and query a data store, representing entities Hobby and Member. In Couchbase, databases consist of buckets that have general Meta-data representing KEY-VALUE pairs.

The default installation folder on Windows is `C:\Program Files\Couchbase`. This folder will be referred to as COUCHBASE_HOME. The command-line programs (tools) are provided in folder `%COUCHBASE_HOME%\Server\bin`. This paper shows how to use the command-line tools to create and query Couchbase buckets. Two programs are utilized: `couchbase-cli.exe` and `cbq.exe`. The former is used to create buckets Hobby and Member and the latter is used to run N1QL queries (N1QL 2016).

N1QL (pronounced as “nickel”) is a declarative query language similar in this structure to SQL.

6.1 Data Definition (JSON Documents)

6.1.1 Creating Buckets Hobby and Member

In order to create the buckets, first open a Command window in the `bin` folder and execute the following commands:

```
couchbase-cli bucket-create -c localhost:8091 -u Administrator 
-p cbjson --bucket=Hobby --bucket-type=couchbase 
--bucket-port=11211 --bucket-ramsize=200 --bucket-replica=1
```
couchbase-cli bucket-create -c localhost:8091 -u Administrator
-p cbjson --bucket=Member --bucket-type=couchbase
--bucket-port=11211 --bucket-ramsize=200 --bucket-replica=1

These commands create two buckets on the server, running at localhost:8091, using the Administrator account with password cbjson, having memory size of 200 MB with one bucket replication. Feedback SUCCESS: bucket-create confirms successful bucket creation.

6.1.1 Adding Data to the Buckets

Data can be added to the buckets using N1QL’s INSERT statements in the cbq.exe Command window. While in the bin folder, launch the cbq.exe program (Figure 6).

The structure of the INSERT statements is simple:

```
INSERT INTO Bucket_Name (KEY, VALUE) VALUES (JSON_Data);
```

Compare it to an SQL statement:

```
INSERT INTO Table_Name (Field_Names) VALUES (Field_Values);
```

At the cbq> prompt, execute the following N1QL statements:

```
INSERT INTO Hobby (KEY,VALUE) VALUES ("1", {
    "hid": "1",
    "name": "Stamps"
  });
INSERT INTO Hobby (KEY,VALUE) VALUES ("2", {
    "hid": "2",
    "name": "Travel"
  });
INSERT INTO Hobby (KEY,VALUE) VALUES ("3", {
    "hid": "3",
    "name": "Golf"
  });
```

Each statement is followed by a feedback. Figure 7 show execution of the third statement along for the successful feedback.
In a similar way, the “records” of entity Member can be added to bucket Member:

```sql
INSERT INTO Member (KEY, VALUE) VALUES ("1", {
    "mid": "1",
    "given_name": "Joe",
    "family_name": "Joener",
    "hid": "3"
});

INSERT INTO Member (KEY, VALUE) VALUES ("2", {
    "mid": "2",
    "given_name": "Pat",
    "family_name": "Patton",
    "hid": "2"
});

INSERT INTO Member (KEY, VALUE) VALUES ("3", {
    "mid": "3",
    "given_name": "Ben",
    "family_name": "Benek",
    "hid": "3"
});

INSERT INTO Member (KEY, VALUE) VALUES ("4", {
    "mid": "4",
    "given_name": "Ann",
    "family_name": "Annar",
    "hid": "1"
});

INSERT INTO Member (KEY, VALUE) VALUES ("5", {
    "mid": "5",
    "given_name": "Kim",
    "family_name": "Kimsky",
    "hid": "3"
});
```
There are two extra statements that must be executed before the buckets can be queried:

CREATE PRIMARY INDEX ON Hobby USING GSI;

CREATE PRIMARY INDEX ON Member USING GSI;

The buckets are now indexed and ready for N1QL queries.

6.2 Data Retrieval

N1QL borrows the look and feel from SQL. Simple queries use a familiar syntax:

SELECT – FROM – WHERE.

6.2.1 Simple Queries

6.2.1.1. Query Example: “Show all hobbies.”

Execute the following N1QL query in the CBQ terminal:

SELECT * FROM Hobby;

Although this query looks exactly like its SQL counterpart (see section 3.2.1.1.), it produces, by default, differently structured output—a JSON document:

"results": [
    {"Hobby": {
      "hid": "1",
      "name": "Stamps"
    },
    {"Hobby": {
      "hid": "2",
      "name": "Travel"
    }},
    {"Hobby": {
      "hid": "3",
      "name": "Reading"
    }},
    {"Hobby": {
      "hid": "4",
      "name": "Painting"
    }},
    {"Hobby": {
      "hid": "5",
      "name": "Photography"
    }},
    {"Hobby": {
      "hid": "6",
      "name": "Hiking"
    }},
    {"Hobby": {
      "hid": "7",
      "name": "Swimming"
    }},
    {"Hobby": {
      "hid": "8",
      "name": "Cooking"
    }},
    {"Hobby": {
      "hid": "9",
      "name": "Gardening"
    }},
    {"Hobby": {
      "hid": "10",
      "name": "Sewing"
    }},
    {"Hobby": {
      "hid": "11",
      "name": "Dancing"
    }},
    {"Hobby": {
      "hid": "12",
      "name": "Diving"
    }}]
Couchbase returns an array of JSON objects, each representing an instance of bucket Hobby. In place of the KEY value, the name of the bucket is shown (here Hobby).

6.2.1.2 Query Example: “Show all members, arranged in ascending order by family name.”

Execute the following N1QL query in the CBQ terminal:

```
SELECT * FROM Member ORDER BY family_name;
```

Again, this query looks exactly like an SQL statement. Its outcome is a JSON document:

```
"results": [
    {
        "Member": {
            "family_name": "Annar",
            "given_name": "Ann",
            "hid": "1",
            "mid": "4"
        }
    },
    {
        "Member": {
            "family_name": "Benek",
            "given_name": "Ben",
            "hid": "3",
            "mid": "3"
        }
    },
    {
        "Member": {
            "family_name": "Joener",
            "given_name": "Joe",
            "hid": "3",
            "mid": "1"
        }
    },
    ...
]
```

To conserve space, only three instances of bucket Member

6.2.1.3 Query Example: “Select member(s) having last name Patton.”

N1QL Query:

```
SELECT * FROM Member WHERE family_name = 'Patton';
```
Query Result:

"results": [
{
"Member": {
"family_name": "Patton",
"given_name": "Pat",
"hid": "2",
"mid": "2"
}
},

"Hobby": {
"hid": "3",
"name": "Golf"
}
],

"results": [
{
"Member": {
"family_name": "Joener",
"given_name": "Joe",
"hid": "3",
"mid": "1"
}
},

"Hobby": {
"hid": "2",
"name": "Travel"
}
],

"results": [
{
"Member": {
"family_name": "Patton",
"given_name": "Pat",
"hid": "2",
"mid": "2"
}
},

"Hobby": {
"hid": "3",
"name": "Golf"
}
],

So far N1QL query statements are identical to SQL.

6.2.2 Complex Queries

6.2.2.1. Query Example: “Show all members and their hobby information.”

N1QL query:

```
SELECT *
FROM Member INNER JOIN Hobby ON KEYS Member.hid;
```

This INNER JOIN query is slightly different from its SQL counterpart. Notice that the ON KEYS clause performs an implied match of Member.hid value with the KEY value of instances of bucket Hobby.

Query Result:

"results": [
{
"Hobby": {
"hid": "3",
"name": "Golf"
}
},

"Member": {
"family_name": "Joener",
"given_name": "Joe",
"hid": "3",
"mid": "1"
}
},

"Hobby": {
"hid": "2",
"name": "Travel"
}
],

"results": [
{
"Member": {
"family_name": "Patton",
"given_name": "Pat",
"hid": "2",
"mid": "2"
}
},

"Hobby": {
"hid": "3",
"name": "Golf"
}
],

"results": [
{
"Member": {
"family_name": "Patton",
"given_name": "Pat",
"hid": "2",
"mid": "2"
}
},

"Hobby": {
"hid": "3",
"name": "Golf"
}
],
Only two instances of the entire output are shown. Each instance of Hobby is joined with corresponding instances of Member, making sure that Member.hid = Hobby.hid.

5.2.2.2. Query Example: “Show names of members whose hobby is Golf.”

N1QL query:

```
SELECT *
FROM Member INNER JOIN Hobby ON KEYS Member.hid
WHERE Hobby.name = 'Golf';
```

This query is a simple extension of the previous one. It filters out instance which contain Hobby.name = 'Golf'.

Query Result:

```
"results": [
{
   "Hobby": {
      "hid": "3",
      "name": "Golf"
   },
   "Member": {
      "family_name": "Joener",
      "given_name": "Joe",
      "hid": "3",
      "mid": "1"
   }
},
{
   "Hobby": {
      "hid": "3",
      "name": "Golf"
   },
   "Member": {
      "family_name": "Benek",
      "given_name": "Ben",
      "hid": "3",
      "mid": "3"
   }
},
...]
```

N1QL is an interesting query language. At the basic level, it is very similar to SQL. Its unique features include handling of ARRAYS and OBJECTS. It appears that the JOIN operations of N1QL are quite limited compared to SQL.

7. SUMMARY

Compared to SQL, the other languages presented in this paper are quite young. XQuery, version 1.0, was born, as a W3C Recommendation, on January 23, 2007. Its predecessor (and sub-language), XPath, dates back to 1999. The SPARQL’s working draft was proposed by W3C on October 12, 2004. N1QL, a query language of Couchbase goes
back approximately to 2012. Dr. Codd’s publication (Codd 1970) marks the beginning of the relational data model and its formal query language, a foundation for SQL.

It is interesting to note that every time a new data model emerges, it suggests that the SQL supremacy will soon be over. “Those watching the NoSQL movement carefully over the past 10 years have observed a curious trend. Initially, NoSQL was a rejection of SQL. Over time, the movement transitioned into Not Only SQL.” Today, many of the most popular NoSQL systems have added SQL or SQL-inspired query tools. In addition, a number of new SQL-Relational data stores are gaining acceptance and mindshare, including VoltDB.” (VoltDB 2016). Moreover, the SQL system, including MySQL presented in section 3, have been adding new functionality that recognize importance of XML, RDF, and JSON.

This presentation focused on similarities rather than differences between different data-store systems and query languages. Those who are already familiar with SQL find it easier to learn the other languages, frequently being surprised how close to SQL they are. These similarity contributes significantly to the steeper learning curve when exploring what one could refer to as “NoSQL but LikeSQL” languages. These languages and their data models offer additional opportunities and capabilities for solving problems that are difficult, if not impossible, to tackle with SQL. These interesting topics will be explored at some other time and place.

REFERENCES

Turtle (2016). Retrieved from https://www.w3.org/TeamSubmission/turtle/.
Measuring Relationship Violence
On A Post-Secondary Campus:
Implications For Prevention
D. Gaye Warthe, PhD, RSW, Mount Royal University, Canada

ABSTRACT
The National College Health Assessment (NCHA) is a health and wellness survey used by over 30 Canadian universities/colleges to collect data on health behaviours, practices and perceptions. Questions on dating violence were added to the survey administered to a large random sample at an undergraduate university in 2008, 2010, 2013 and 2016. One-third of students reported experiencing violence in one or more dating relationships and significant differences were noted between women and men in their attitudes, experiences and responses to relationship violence. The survey results support the need for primary prevention programs for dating, domestic and sexual violence, resources for responding to disclosures, and policy and education to address safety for the campus community.
Using A Dating Violence Prevention Project To Educate Social Work Students

D. Gaye Warthe, Ph.D., RSW, Mount Royal University, Canada
Patricia Kostouros, MR., R, Psych, Ph.D., Mount Royal University, Canada
Cathy Carter-Snell, Ph.D., RN, SANE-A, Mount Royal University, Canada

ABSTRACT

Undergraduate Social Work education prepares students for generalist practice. It is anticipated that graduates have knowledge of theoretical frameworks and practice issues specific to intimate partner violence including an awareness of how their personal experiences or beliefs impact practice. While a traditional lecture format can result in increased knowledge and awareness, using experiential methods of instruction offers students the opportunity to use their acquired knowledge to challenge attitudes and beliefs that contribute to the perpetuation of intimate partner violence. Involvement of undergraduate students in a peer facilitated dating violence prevention project on a university campus resulted in students describing transformational change in their beliefs and responses relative to intimate partner violence. This presentation will describe a continuum of strategies used at an undergraduate university to educate students about intimate partner violence.
What Psychosocial Interventions Work For Players’ Aggression, Depression, And Loneliness? Effect Of Therapeutic Catharsis And Life And Game Self-Efficacy

Hye Rim Lee, Konkuk University, South Korea
Eui Jun Jeong, Konkuk University, South Korea
Dong Nyeon Ku, Konkuk University, South Korea
Joo Woo Kim, Konkuk University, South Korea

ABSTRACT

The present study explored potential therapeutic mechanisms of playing preferred games as predictor of therapeutic interventions on players’ psychosocial problem factors. We took a therapeutic approach to integrate perspectives on catharsis, generic model of psychotherapy, mood management, uses and gratification, and self-efficacy. Based on this framework, we present a path model describing how therapeutic catharsis seeking and life and game self-efficacy affect aggression, depression, and loneliness including generalized sub-constructs of each factor from theoretical and empirical perspectives as multicomponent source. The current results indicate that therapeutic catharsis seeking was found to alleviate aggression via favorite game playing. Similarly, life self-efficacy was a primary predictor for alleviating depression and loneliness. However, game self-efficacy was positively associated with depression and loneliness. These findings provide novel contributions to the current research on relations between potential therapeutic factors and players’ psychosocial problem factors and offer practical implications and new directions for research communities.
Hydrogen Supply Network Model Using Multiple Transportations With An Associated Replenishment Cycle
Young-Bin Woo, Incheon National University, South Korea
Byung Soo Kim, Incheon National University, South Korea

ABSTRACT

This article addresses a problem for hydrogen supply chain network using multiple transportations with an associated replenishment cycle. A mixed integer non-linear programming (MINLP) model is developed for the optimal network transportation policy. Due to the problem intractability, a two-stage genetic algorithm (TGA) is proposed including a relaxed MILP combined within the overall genetic algorithm (GA) solution procedure. The performance of algorithms are compared using randomly generated instances.

Keywords: Hydrogen supply chain network; Replenishment cycle; Transportation; Genetic algorithm.
Financial Consequences Of Recognizing Goodwill As A Contra-Equity Account

Jacqueline Conrecode, Florida Gulf Coast University, USA
Adrian Valencia, Florida Gulf Coast University, USA
Ara Volkan, Florida Gulf Coast University, USA

ABSTRACT

Both the US and global accounting standards require that goodwill identified in corporate acquisitions be capitalized as an asset and evaluated for impairment in subsequent periods. The capitalization of goodwill has been debated for over a century, with both supporters and opponents making excellent arguments in defense of their views. This study proposes an approach that retains the recognition and measurement methods currently in use but reports goodwill as a contra-equity account. The financial impact of this proposal is determined by analyzing the changes in return-on-assets (ROA) and debt-to-equity (DTE) ratios of companies reported in the Compustat data base.
Nontraditional Student Risk Factors And Gender As Predictors Of Enrollment In College Distance Education
Tammy Crews Pao, Brandman University, USA

ABSTRACT
The purpose of this study was to examine whether nontraditional student age, female gender, and the possession of nontraditional student risk factors predict enrollment in distance education college courses. This study used data from the most recent National Postsecondary Student Aid Study (NPSAS:12), which consisted of approximately 95,000 undergraduate students who were enrolled in higher education in 2011-2012. The results of a logistic regression analysis indicated that both nontraditional student age and female gender were strong predictors of enrollment in distance education, whereas the number of nontraditional student risk indicators was a partial predictor. As leaders in higher education are tasked with decreasing time to degree completion, it is hoped that the findings of this research will support distance education as one solution to this problem. Further exploration through the deconstruction of the nontraditional student risk index as defined by the National Center of Educational Statistics as well as examination of other factors such as ethnicity and GPA are needed to provide a more complete analysis of predictors of distance education enrollment as well as better data collection for distance education retention and success.
A Model Of Client Education: A Framework To Teach
Pamella Stoeckel PhD, RN, CNE, Regis University, USA

ABSTRACT

Client education and health promotion are among the fastest growing programs in the health care arena; however the components of the client education process have not been clearly identified. There is a need for a model of client education to guide educators and healthcare professionals.

This presentation highlights the Miller-Stoeckel Client Education Model. The Model provides a framework for viewing the essential components of health education and is drawn from the text Client Education: Theory and Practice (2015). Four components of the model are presented: Nurses as educator, Clients as Learners, the Nurse-Client Relationship, and Client Education Outcomes. Each component is clarified, and described. The application of the model is applied to a variety of healthcare disciplines in different settings.

Client education is an accepted and expected part of health professionals’ practice (Oermann & Templin, 2000). It is generally defined as any set of planned activities designed to promote changes in peoples’ health behaviors or beliefs. It is an outgrowth of health education and is associated with achievement of particular treatment outcomes, client satisfaction, and improved health (Simon, 2000). Client education and health promotion are among the fastest growing programs in the health care arena; however the components of the client education process have not been clearly identified.

Nurses are in an essential position to coordinate client health education because they are the healthcare providers who have the most continuous contact with clients. Because nurses are with clients at teachable moments, they do most of the health education. National healthcare standards mandate education for all patients (Joint Commission of Hospital Accreditation [JCAH], 2000). Just as important as educating clients, nurses also have the professional responsibility to educate colleagues. These facts support the need for a model of client education to guide educators and healthcare professionals.

This presentation highlights the Miller-Stoeckel Client Education Model. The Model provides a framework for viewing the essential components of health education and is drawn from the text Client Education: Theory and Practice (2015). Four components of the model are presented: Nurses as educator, Clients as Learners, the Nurse-Client Relationship, and Client Education Outcomes. Each component is clarified, and described. The application of the model is applied to a variety of healthcare disciplines in different settings.

Improving understanding of health education will enhance the provision of healthcare. This presentation addresses the importance of Miller-Stoeckel Client Education Model to guide health education that will impact health, illness, and wellness in the local, national, and global health arenas.

REFERENCES

Looking Inward: Exploring The Use Of Reflexive Photography In Social Work Field Education
Brent Oliver, Mount Royal University, Canada
Mary Goitom, York University School of Social Work, Canada
Darlene Chalmers, University of Regina, Canada

ABSTRACT

Field practica are an integral part of the curriculum in social work and are critical in preparing students to develop practice skills, integrate and apply theories, and develop an emerging professional identity. Reflexive photography assignments are a novel tool being used in some programs to assist practicum students to record, reflect and communicate their learning in their field. Consistent with approaches that view new knowledge as evolving through the processing of experience; reflexive photography affords students the opportunity to articulate the meaning of their experiences in a format that allows for increased feel, physicality, and emotion. Reflexive photography provides an experiential learning strategy that assists students to document social realities at their practicum and reflect on their impact on emerging practice. Additionally, it provides an opportunity to engage students to think critically and develop skills in reflexivity by integrating their learning with critical analysis through the use of visual methods. In this assignment, students use digital cameras to document their learning while in practicum and to address questions regarding both the content and the context of the photo.

This paper will identify and discuss results from a recent scholarship of teaching and learning project on reflexive photography. The purpose of this collaborative research was to explore social work student's experiences with reflexive photography within three distinct and diverse programs offering social work education in Canada. Specifically, the research posed the question, "what learning processes do social work students experience as they participate in a reflexive photography project and how does this learning contribute to their professional experiences in practicum and in the field."

The study utilized grounded theory methodology to better understand the processes students experienced as they strived to make meaning of, and reflect on their emerging professional practice. Grounded theory is an inductive, qualitative research methodology that is well suited to studying social and psychological processes (Charmaz, 2014). Grounded theory offers guidelines for collecting and analyzing data resulting in the emergence of inductive theories that are grounded in the lived experiences of research participants (Charmaz, 2014; Draucker, Martzolf, Ross, & Rusk, 2007).

Purposive and theoretical sampling methods were used to recruit undergraduate and graduate social work students registered in field practicum at three Canadian universities. Data collection included two qualitative sources including key informant interviews with participating students and their associated reflexive photography project submissions (photographs and text captions). Qualitative data analysis was conducted utilizing grounded theory coding methods and constant comparative analysis of the interview data and student assignments.

The analysis identified important themes related to students' experiences with the reflexive photography project, the meaning and insight they drew from participating in the project, their perspective on the strengths and challenges experienced as part of the process, and their ideas on alternatives to enhance their learning. This paper explores the themes related to student's internal reflections. Participants described a range of reflective processes that involved looking inward to make sense of their work with clients and their practicum experiences. This included engaging with reflexive photography as a tool to enable them to express empathy for their clients, reflect more deeply on client work and reflect on their emerging professional identity.
These results help inform the discourse on reflexivity within social work education and within other professional disciplines. Study findings will improve both student learning and teaching practice within the universities involved and lead to an increased understanding of students’ perspectives on reflexive photography and its potential as a pedagogical tool.
My Favorite Character Wore It: Influence Of Fictional Character Traits And Wishful Identification On Purchase Behaviors

Heather Shoenberger, University of Oregon, USA
Eunjin (Anna) Kim, Southern Methodist University, USA

ABSTRACT

This study examines the underlying character attributes that may predict wishful identification and thus enhance brand trust, and wishful and indicated product buying of products used by a favorite character in a television show. Results indicate that wishful identification does, in fact, persist beyond the viewing experience. Additionally, we offer evidence of certain character attributes as more likely to predict wishful identification that may elucidate options to advertisers looking to defeat commercial skipping possibilities through branded entertainment solutions. These findings illuminate further the importance of wishful identification long after the viewing period has ended. It also offers practical suggestions for advertisers as they make decisions on characters with which to place branded entertainment messages.
Investigation On Language Teachers’ Attitude And Behavior Toward Reflective Teaching

Ms. Wen, Ge, Nanjing University of Aeronautics and Astronautics, China

ABSTRACT

Teacher quality is one of the key elements which determine the success of educational reformation. In the latest decades, the terms reflective practitioner and reflective teaching have become slogans for reform in teacher development and school improvement all over the world. Although reflective teaching is a relatively new concept in China, ideas such as reflective teaching are going to be accepted and studied by more and more teachers and scholars. It is necessary to develop a reflective approach to achieving professional development for language teachers. It’s high time for language teachers to get involved in teaching reformation, to be a reflective teacher, to be a decision-maker, and above all, to be a researcher as well as a teacher.

Attempting to help language teachers to develop effective teaching methods by using reflection, this paper has investigated whether language teachers are familiar with the notion of reflective teaching, how they reflect their own teaching and whether they have different reflection methods; it also has investigated the teachers’ attitudes towards facilitating reflection in the process of professional development. Questionnaire and interviews are utilized respectively as the means to investigate implementation of reflective teaching. The questionnaire is composed of three parts with a total number of no less than 50 questions.

The results show that 1. not everyone knows about reflective teaching explicitly, but most participants are doing reflective teaching subconsciously. 2. most participants who don’t know reflective teaching will carry it out in a quick and informal way. 3. participants will adopt collaborative reflective teaching or personal reflective teaching to reflect on their practice. 4. half of the participants don’t have a strong sense of self-awareness or sense of self-development. 5. 60% of the participants believe reflective teaching can improve teachers’ capacity of self-awareness and self-reflection.

Keywords: Language Teacher; Attitude; Behavior; Reflective Teaching

BIOGRAPHY

Ms. Wen, Ge, is an Associate Professor at Nanjing University of Aeronautics and Astronautics, China. She holds a Master Degree in Language Teaching and Learning from the Nanjing Normal University. She has taught English as a foreign language for 25 years. Her research interests are evaluation & assessment of language teaching, teaching English as a second/foreign language and second language acquisition.
The Effects Of Motivational Intervention On EFL Students’ Motivation
Qi Li, Nanjing University of Aeronautics and Astronautics, China
Ge Wen, Nanjing University of Aeronautics and Astronautics, China

ABSTRACT

This longitudinal intervention study aimed to examine the effects of goal-setting strategy used in the English as a foreign language (EFL) classroom on students’ motivation. More specifically, this study also investigated differences in the effects of goal-setting strategy on students’ motivation according to their original motivational intensity levels. The participants consisted of 102 EFL students from two English classes, who were first year, non-English major university students. The two classes were randomly allocated to the experimental group and the control group. The experimental group received the goal-setting strategy training for 12 weeks. The control group did not receive any treatment. The motivation of the students in two groups was measured by a self-report motivation questionnaire at two different times: before and after the intervention. The results revealed that (1) overall, the goal-setting strategy training had positive effects on the students’ motivated learning behavior as well as their motivational state; (2) the effects of goal-setting strategy training on students’ motivation differed according to their original motivational intensity levels.

Keywords: Motivational Strategies, Goal-Setting, Intervention, Goal-Setting Strategy Training, EFL Learners
Author requested nothing in proceedings.
A Competency-Based Technical Training Model That Embraces Learning Flexibility And Rewards Competency

Lee Yasinski, Red Deer College, Canada

ABSTRACT

Today’s adult learners are continuously searching for successful programs with added learner flexibility, a positive learning experience, and the best education for their investment. Red Deer College’s unique competency based welder apprenticeship training model fulfills this desire for many adult learners.

Keywords: Competency-Based Technical Training; Adult Learners; Student-Centered Learning

INTRODUCTION

Competing in today’s oil and gas-based economies requires countries to possess more than merely a large reserve of either natural resource. Alberta’s competitiveness and innovation in this field can be attributed to a proven educational system consistent upon the highest standards of technical training for its trades people. The delivery of adult technical training in the trades exists worldwide using various delivery models. Alberta Apprenticeship specifies the prerequisites for a worker to be certified in Alberta’s trades. Welding apprenticeship training at Red Deer College utilizes a unique delivery model entailing competency-based apprenticeship training. Re-evaluation of work’s future by leading global authorities reveals “changes in the way students are being educated for work” and “the demands placed on workers in the knowledge age will force a major shift towards learner-centered organisational development strategies” (Kostos, 2006, p. 75). This competency-based apprenticeship training delivery model is underpinned by a blend of both teacher and student-centered learning, which requires “new policies and practices that enable and support learners as they re-focus their careers into a new world of work” (p. 75). One benefit of student-centered learning is that adult learners have an opportunity to complete their technical training early and re-enter the workforce based on proven competency.

THE ALBERTA APPRENTICESHIP

Apprenticeship in Alberta is a combination of work-site experience and technical training in a trade. It is a three-way agreement between an apprentice (worker), employer, and Alberta Apprenticeship. Depending on the trade, completion of an apprenticeship program lasts between one and four years, and apprentices spend approximately eighty percent of their time learning on-the-job from a qualified tradesperson (journeyperson). The remaining time is spent at a college or technical institute learning the theories, technologies, and skills of their trade (technical training). Apprentices earn a wage while working on the job, relative to their fellow journey people. As the apprentice completes each year of training, he or she receives a pay increase, again based on the standard rate of journey people in their respective trades. Upon completing a program, candidates receive an Alberta Journeyperson Certificate that fulfills Alberta’s superior industry trade standards. There are approximately fifty designated trades in Alberta, and welding is a compulsory trade among them; therefore, an individual must be a journeyperson welder or indentured in the Apprenticeship Program of Welding (welding apprentice). The Alberta government primarily funds apprenticeship technical training (institute’s requirements for delivery), although students pay for textbooks and a nominal registration and institutional fee. Furthermore, the program features a stringent policy mandating the documentation of attendance (Government of Alberta, 2012).
STUDENTS AND REQUIREMENTS

Apprentices are adult learners ranging in age from their late teens to fifties who attend eight weeks of technical training while balancing their daily lives. Students often struggle to maintain their standard of living since few receive any wages during training. It is common for up to forty percent of a class to work beyond class hours to support their families and lifestyles. Entrance prerequisites allow for classes catering to a diverse range of academic abilities and work skill-sets, coupled with additional student challenges unique to each class.

Students who desire to enter into a welder apprenticeship agreement must meet one of the following minimum educational requirements: completion of English 10-2 and Math 10-3 (both of which are lower level tenth grade courses), posses a General Educational Diploma (GED), or complete the Alberta Apprenticeship and Industry Training entrance exam for welding (twenty-two questions focused on English, reading, and comprehension; fifty on math; and twenty-eight on science) with a passing score of seventy percent or higher. Ideally, a student should enter the welding trade possessing an Alberta High School Diploma having completed English 30-2, Math 30-3, and Physics 20 (or alternatively Chemistry or Science 20), in addition to related courses in career and technology studies (Government of Alberta, 2012).

For each year of the apprenticeship welding apprentices are required to pass both institute and government exams, and must finish their technical training at Red Deer College with a score of at least sixty-five percent before proceeding to complete that respective year’s government exam. Students must score a minimum of seventy-percent on the government examination or else remain at their current (first, second, or third year) apprenticeship level.

INSTRUCTOR

Most college or technical institutes offering the apprenticeship program require instructors to possess a minimum of five to ten year’s experience as a journeyperson, supplemented by trade-related training (such as an engineering degree) or post-secondary (college or university level) education. Competency based delivery requires a well-rounded, enthusiastic, techno-savvy instructor with proven skills in content creation, presentation, management, and adult learning curricula. However, among these characteristics, Bryson and Hand (2007) rightly assert that enthusiasm is the most critical and “a prerequisite for student engagement” (p. 357). A correlation exists between student achievement and an instructor's successful adaptation to constantly changing classroom dynamics, such as variations in academic ability, ethnic background, and learning style, in addition to student disabilities, real life experiences, and personal challenges. A welding instructor therefore must deliver all curriculum components at any given time, to every individual or group throughout a course’s duration with enthusiasm. This requires welding instructors to possess not only knowledge of several different welding processes but also to demonstrate proficiency in math, blue-print reading, pattern development, metallurgy, history, and codes. At institutes offering a more traditional form of training, content experts are often expected to address subjects such as math and metallurgy. Indeed, as Sinclair and Mitchell (2000) note, “good teachers are those who know what it is like out in the field” (pp. 5-22). A sentiment mirrored by several students in their interviews, who stressed the importance of practical knowledge over theory.

A COMPETENCY-BASED MODEL EMBODIES FLEXIBILITY

The Red Deer College welding department has provided technical training to welders using a competency-based delivery model for over ten years. A total of six hours each day is devoted to technical training for eight weeks; each six-hour day is divided into a shop and theory component.

Regarding the shop component, the Alberta Apprenticeship curriculum outlines the amount of time and practical skill level required for students to progress to the next year of an apprenticeship, and the shop component combination of training on-the-job and technical training functions ensure this. On-the-job training varies according to each student’s degree of experience in the field and with different welding processes (equipment). As Christman (2012) indicates, “On-the-job training [that teaches] job-specific skills is an important dimension [of an]
The apprenticeship program” (p. 26). Thus, the skill set for students working in manufacturing differs from those specializing in industrial maintenance or the petroleum industry.

Red Deer College’s shop component maintains a ratio of one instructor for every twelve students, resulting in increased safety, time allotted to demonstrations, and sufficient opportunities for self-evaluation and skill advancement. The yearly practical test welds (projects) are either evaluated visually or by using a combination of both visual examination and destructive testing (guided bend test). The evaluation criteria are detailed concerning the expected visual appearance and soundness of the weldment (cleanliness throughout its cross-section). Students unable to meet the training’s practical requirements must repeat the level if they wish to continue in the trade. Those who fail their first attempt for any given year are typically successful upon their second.

The theory component of the model is delivered in two ninety-minute blocks daily, with one classroom session and another in the learning commons area. The classroom session generally embodies Kember’s (1997) teacher-centered/content-oriented approach, which focuses on “the communication of defined bodies of content or knowledge” (p. 264). Classroom time is used to ensure that the curriculum is covered in its entirety using a variety of delivery formats, occasionally in tandem, including PowerPoint presentations, videos, whiteboards, and props. Furthermore, the use of clickers, question and answer sessions, mind mappings, flowcharts, and quizzes reinforce and validate student progress and understanding. By sharing their experience and knowledge, instructors provide a clear path for learners to understand concepts and information. Hence, the instructor is akin to a lead ant with others (students) following it towards a food source (concept), who then demonstrates the quantity to break off (defining details), how it should be loaded (understanding), and the return path to the ant hill for storage (retention). This cycle is repeated until the food source is deconstructed according to all relevant details, subsequently facilitating the complete understanding of a concept.

The second ninety-minute block, which is spent in the learning commons area, draws upon Kember’s “student-centered/learning-oriented approach, focusing on student learning while taking a developmental approach towards students and their conceptualization of knowledge; in other words, emphasis is placed on students’ acquisition of knowledge rather than lectures” (p. 264) as students take ownership of the learning process. Spaces for both group and individual study are available in the commons, as well as internet access, enabling students to use school equipment or personal devices such as i-pads, smart phones, or laptops to enhance their studies. Similarly, instructors are given a small cubicle where exams can be reviewed or student issues addressed in a confidential manner.

Students may choose to work in groups or alone and can cover content at their own pace, allowing learners to concentrate on difficult subjects and minimize emphasis on less troublesome topics. This is in agreement with McLean and Gibbs’ (2010) assentation that a flexible curriculum should, “Allow time for independent learning and pursuing areas of interest” (p. 228). Students collaborating (social networking) implement personal learning preferences and share life experiences to achieve a mutual understanding of concepts. In parallel, an instructor is close by and readily available to provide learners with access to their wealth of knowledge and personal experience. By switching from teacher to student-centered learning daily, students are revitalized and prepared to engage in active learning. In this scenario, the lead ant (instructor) merely points his followers (students) in the food source’s (concept’s) general direction, as they work individually or in groups to break food (the defining details) off, determine how it should be loaded (understood through the sharing of learning experiences and styles), and finally returned to the ant hill for storage (retention). The lead ant’s role is to oversee the process and provide assistance if needed. No finite cycle exists since each group or individual deconstructs and retains information using a technique specific to his or her needs.

**TESTING**

The Red Deer College welding department possesses a large on-line test bank for each year of technical training, providing students with the flexibility to approach topics at a rate relative to their understanding of each one. Additionally, this allows for early exit while maintaining the programs quality and security. Test questions are selected from pools directly linked to the curriculum’s objectives; a given percentage of questions are drawn from
each pool randomly, and the created assessments are never alike. The curriculum is currently being delivered using Blackboard 9.1 as the assessment management program. Course content can be accessed through the college website, which contains a map illustrating each content area and its supporting module, review, and supervised exams. Students with Internet access can finish modules and review exams at any time, although supervised exams must be taken in a testing room, which is accessible from the learning commons area.

STUDENT RECOGNITION

Red Deer’s training and learning delivery system is unique, and the college has gained recognition throughout Canada as a choice institute for technical training in the welding trade. Through word of mouth, the school has attracted students from distant locations such as New Brunswick, Newfoundland, Nova Scotia, and Prince Edward Island. Students with learning difficulties, or those who have struggled at other institutes, often find this delivery system provides sufficient flexibility to facilitate a positive learning experience. As noted by McLean and Gibbs, institutions must recognize, “Students as individuals” and “embrace student diversity and [their] individual learning needs” (p. 227). Indeed, the author believes that Red Deer’s system accomplishes this goal by catering to highly self-motivated students, or those supporting families, who welcome an opportunity to complete their studies early and re-enter the workforce promptly.

CONCLUSION

The competency based technical training model presented in this article is an optimal delivery system, affording adult learners greater flexibility in balancing their studies and personal responsibilities. This is accomplished by allowing students to study at their own pace using both face-to-face and electronic social networking to complete their studies promptly and secure employment. Alberta Apprenticeship has established itself as an educational institution with high standards, whose welding journey people have gained worldwide recognition. Furthermore, it has played an undeniable role in strengthening Alberta’s economy, competitiveness, and innovation in the global oil and gas industry. Alberta’s apprenticeship and industry training system has aptly responded to labor market conditions by developing a highly skilled workforce capable of competing on both national and international levels.

AUTHOR INFORMATION

Lee Yasinski is a professor of welder technical training at Red Deer College and formally taught fabrication studies at the high school level. He has attended Okanagan University College, Medicine Hat College, the Northern Alberta Institute of Technology, and Vermilion College. Lee Yasinski, Red Deer College, 100 College Boulevard, Box 5005, Red Deer, AB, Canada, T4N 5H5.

REFERENCES


Kostos, C. (2006). Learning in the knowledge age, where the individual is the centre of learning strategy and organisational success. Australian Journal of Adult Learning, 46(1), 75-83.


Common Factors Of The Best Elementary Schools In The United States
Lindy Valdez, Ed.D., California State University, USA

ABSTRACT

The purpose of this study was to review of the “Best Elementary Schools in the United States,” as rated by prominent publications and websites and determine if these schools had any common factors. The schools were ranked on the basis of various academic criteria on reading and math scores. Each school was then studied to determine what the racial and socio-economic make-up of the student population. The curriculum and extra-curricular activities were studies and listed. A comparison to other schools on these lists reveals seven factors that are universal to all of these best elementary schools. The factors include, specialists in Art, Music and Physical Education. In addition, each school had a Librarian and after school extracurricular offerings. Lastly, these school most commonly did not have racial diversity and had little free and reduced lunches. These factors were found to be significantly different than the curricular offering for the average elementary school in the United States. The findings were supported by the importance of these areas in the research on these factors of school curriculum on academic achievement.
Building Strong Faculty-Student Relationships: A Path To Lower Attrition Rates At Online Universities

Dr. Joe R. Putulowski, California Baptist University, USA
Dr. Robert G. Crosby III, California Baptist University, USA

ABSTRACT

Student attrition rates are significantly higher in online degree programs than they are in traditional face-to-face programs (Angelino, Williams, & Natvig, 2007; Aversa & MacCall, 2013; Pontes & Pontes, 2012). One possible explanation for these higher attrition rates may be that online students are less integrated with faculty and peers, which is theorized to affect institutional commitment and degree persistence (Tinto, 1975). This experiment investigates whether personalized messages from an online professor via email or text message influence students’ perceived integration with faculty, institutional commitment, or course evaluations. Participants were 242 students (26% male, 74% female) ranging from age 18 to 60 (M = 30.00, SD = 9.26) enrolled in an online undergraduate degree program. Participants were randomly assigned to one of five treatment groups: a single email, a single text message, weekly emails, weekly text messages, or a no-treatment control group. Nine professors participated in sending scripted text messages and emails to the participants. Participants completed surveys during the first week of an eight-week class, halfway through the class, and at the end of the class. Results showed that faculty communication in a single course did not influence students’ perceived integration with faculty or commitment to the university. However, students who received weekly messages experienced temporary gains in their overall evaluation of the course relative to the other treatment groups. We discuss implications for online educators seeking to lower attrition rates, build student-instructor relationships, and improve student course evaluations.

Keywords: Attrition, Online Education, Text Messages, Email, Social Integration, Institutional Commitment, Course Evaluations, Student-To-Instructor Relationships

REFERENCES

Quantifying Assessment Of Undergraduate Critical Thinking
Michael Grant, University of Colorado Boulder, USA
Marshall Smith, University of Colorado Boulder, USA

ABSTRACT

We assessed the change in critical thinking skills with a sample of 176 students enrolled at either the University of Colorado Boulder (UCB) or Colorado College (CC). We employed the Critical-thinking Assessment Test (CAT) developed with collaboration and support from the National Science Foundation to effectively assess critical thinking skills among these undergraduate students. Students' critical thinking progress was compared by assaying skills during the first and last weeks of the term in classes that expressly emphasized: (1) critical thinking, or (2) civic engagement, or (3) where neither was a point of major emphasis according to the class instructors. CAT scores improved significantly for students at both institutions, in different categories of class types, and over the dramatically different lengths of terms (3.5 weeks at CC vs 15 weeks at UCB). Our research contributes to an understanding of changes in critical thinking as part of their undergraduate experience. This is the characteristic that a dominant fraction of higher education faculty has often identified as the single most important goal of an undergraduate education. We also demonstrate that the CAT instrument can be an effective tool for assessing critical thinking skills across very different types institutions of higher education but in similar ways.

Keywords: Critical Thinking, Learning, Assessment, CAT.
Social Media Ethics And The NFL
Martin D. Carrigan, MBA, JD, The University of Findlay, USA

SOCIAL MEDIA

Social media includes all forms of electronic communication used to share information and personal messages with an online community, including social networks, bookmarking sites, media sharing, social news, microblogging, and blog comments and forums (Grahl, n.d.). While these tools differ in their structure, they overlap by allowing users to create a profile and interact with other users, post comments or ideas to a wide audience, or post files such as videos. Compared to more traditional media forms, social media has greater speed and scope of publicity, is generally low cost or free, and is more interactive (Institute of Business Ethics, 2011). Positive aspects of social networking include the ease of making connections with other people regardless of geographic location and the opportunity for fans to interact with or follow those they admire. On the other hand, drawbacks to social networking include increased risk of identity theft and the potential to become addicted to checking for updates at the expense of other activities (Strickland, 2009).

Use of social media has been rapidly increasing in recent years. The Pew Research Center reported 65% of American adults used social networking sites in 2015 compared to only 7% in 2005 (Perrin, 2015). When evaluating trends, no notable differences in usage were found based on race or gender. Young adults remain the most likely age group to use social media, but a pattern of increasing social media use by adults 65 years of age and older has been identified (Perrin, 2015). The three most popular social networks worldwide in 2015 based on account ownership and active usage were Facebook, YouTube, and Twitter (Chaffey, 2016).

IMPACT ON SPORTS BUSINESS

The surge in social media use has created new ethical challenges and dilemmas within the business world. The central elements are how best to promote freedom within an ethical context of responsibility (Lipschultz, 2015). Companies find they have less control over communication with the public, while employees and job applicants have more difficulty keeping personal information private, and it can be tough to ensure accounts are protected and information found online is legitimate (Hyatt, 2010). Additionally, the immediate and continuous nature of social media can force businesses to respond rapidly to issues or criticism (Lipschultz, 2015). Comments made through social media can have significant economic or legal repercussions for businesses and for that reason more and more companies are creating rules regarding appropriate use. These restrictions can apply to professionals in many fields, including professional athletes within the sports business industry.

Whether professional athletes should be viewed as role models or not has long been a contentious subject. Some would argue they are doing no more than providing entertainment with their athletic skills. Others would argue they should be held to a higher ethical standard because they serve as role models for those who admire them (Hanson, 2012). This longstanding debate can also carry over into the realm of social media use. Since athletes are in the public spotlight, information they share on social media is more likely to be viewed by large numbers of people and minor details can be scrutinized. In order to prevent strategic information from being leaked or inappropriate remarks, an increasing number of sports organizations are developing restrictions for use of social media tools. By doing so, the organizations seem to support the idea of the athletes as role models in the community with ethical obligations beyond athletic performance.

Sports businesses placing restrictions on social media use by athletes, coaches, or reporters has been controversial. There are some unique ethical aspects in this field, such as the rights of networks who paid money for the exclusive privilege of broadcasting sporting events (Hyatt, 2011). Since there is a contract in place with the networks, it is unlawful for others to record the live action and attempt to share it via social media. It may, however, be acceptable for social media sites to encourage comments by fans during the game as long as this does not infringe on the rights
of networks to actually broadcast the action. This practice is becoming increasingly popular, with sites such as Facebook and Twitter competing to attract fans to their platforms (Wong, 2016).

It is also important for sports teams or athletic departments who are making policies regarding use of social media to recognize individual rights to freedom of speech. The First Amendment to the U.S. Constitution guarantees freedom of expression, but the individual team and league organization is concerned with its image and economic opportunities. Instead of banning use entirely, it may be more appropriate to encourage social media in a responsible way such that no social media posting can violate existing institutional or team policies on respectful conduct, harassment, or governance association rules (Lopiano, 2013).

NATIONAL FOOTBALL LEAGUE SOCIAL MEDIA POLICY

In recent years many sports leagues have developed policies regarding use of social media including the National Football League (NFL). Beginning in 2009, the NFL banned players, coaches, and football operations personnel from using social media during football games from ninety minutes before kickoff until traditional media interviews have concluded after the game (NFL, 2009). During the games, no updates are allowed by the individual athlete, coach, team or anyone representing such personal social media account (NFL, 2009). Additionally, use of social media by NFL game officials and officiating department personnel is prohibited at any time.

Incidents which led to that policy included the Cincinnati Bengals’ Chad Ochocinco’s initial plan to signal Twitter updates to a fan in the stands. Ochocinco was fined $25,000 in 2010 for tweeting 77 minutes before a Bengals-Eagles preseason game. Darnell Dockett of the Arizona Cardinals was fined $5,000 for a tweet he posted 20 minutes before the Cardinals-Rams game in September 2010.

As new technologies are developed and use of social media continues to increase, the ethics of social media restrictions will continue to evolve. Despite the ongoing changes, traditional ethical standards regarding fairness and respect will continue to apply. Sports organizations have used social media to build relationships by sharing information and promoting products (Wang, 2015). In fact, by using social media consumers are often participants in promotions rather than just consumers of promotional offerings (Larkin, 2015). These practices are likely to continue as the size of the audience expands. Additional rules may need to be created in order to have clear and equitable exchanges with fans. The NFL recently posted rules for its official social media accounts that specify that any content posted by a user can be used by the NFL for any purpose and that the person making the post must have the right to do so as the original owner of the content (NFL, 2016). These types of rules are necessary to prevent liability for the sports organization, such as accusations of copyright infringement for redistributing content from users.

Another aspect crucial to the evolution of the ethics of social media restrictions is recognition of the power that athlete’s accounts can have (Larkin, 2015). Statements made on social media by an athlete can be just as valuable as the organization’s own marketing efforts. Sports teams can capitalize on the power of athlete’s accounts by promoting use of social media by athletes in a responsible way. Going forward, it will be increasingly important to clearly distinguish whether the views expressed are that of an individual or an organization. Comments also need to remain genuine and accurate in order to maintain trust between athletes and fans.

CONCLUSION

Social media is an increasingly popular method of sharing information with greater speed and scope compared to traditional media forums. The rise of social media has created new ethical dilemmas in the business world due in part to a lack of control of communication and challenges protecting privacy and ensuring accuracy. These dilemmas extend into the sports business industry where new restrictions on social media use are being placed on athletes, coaches, and reporters.

Controversial issues related to this policy include consistency in enforcement and the potential to violate individual rights such as freedom of speech. Going forward, there is a need for clearly communicated education on responsible use of social media. Recognition of the power of athlete’s comments on social media can help to promote use in a
way that is beneficial to individuals and organizations. Traditional ethical standards regarding fairness and respect will likely continue to apply, while additional rules to protect privacy may be necessary.

REFERENCES


Service Learning And Experiential Learning Opportunities In Higher Education
Rachel J. Holmes, Estrella Mountain Community College

ABSTRACT
The author is currently a Doctoral student focusing on the topic of service learning and experiential learning opportunities at the community college level in order to enhance learning opportunities for students that will better prepare students for their career choices. This requires the study of research, and in this submission the research relates to two peer-reviewed articles focusing on service-learning in higher education. The articles will be discussed in terms of hypothesis, method of research sampling used, validity and reliability, and ethical safeguards required. The articles are then analyzed for similarities and differences, and the author will discuss how this research has been used to enhance the educational experiences for students at Estrella Mountain Community College in Avondale, AZ.

Keywords: Research, Service-Learning, Validity, Reliability, Sampling
Multicultural Education: Teachers’ Perceptions And Preparation
Halah Alismail, University of Minnesota, USA

ABSTRACT

This paper focuses on theory and practice in multicultural education as it pertains to the preparation of preservice teachers. The literature reviews the history and definition of multiculturalism and investigates multiple theoretical frameworks around the ongoing debate and issues of multicultural education. Teachers’ perceptions of multicultural education and various approaches to multicultural pedagogy and curriculum are explored. The finding indicates that thorough and balanced courses preparing preservice teachers to teach culturally diverse students are essential to supporting teachers’ awareness, knowledge, and skill in providing equal education for all students.

Keywords: Conservative, Liberal, And Critical Multiculturalism, Teachers' Perceptions And Preparation
Author requested nothing in proceedings.
Personalized Weekly Overviews: A Comparison Of Text And Video Notifications Measuring Student Engagement, Achievement And Misunderstanding In An Online Classroom

Richard Ardito, California Baptist University, USA
Scott Dunbar, California Baptist University, USA
Elizabeth Morris, California Baptist University, USA
Riste Simnjanovski, California Baptist University, USA

ABSTRACT

Do personalized weekly announcements matter in an online course; and if so, is there a significant difference between plain text versus video announcements? This study examines student engagement, instructor evaluations and misunderstanding in online classrooms that implemented weekly text announcements versus online classrooms utilizing weekly video announcements.
Author requested nothing in proceedings.
Best Practices For The Development And Teaching Of ESL Online Reading And Writing Courses

Stephen G. Peridore, College of Southern Nevada, USA

ABSTRACT

The purpose of this presentation is to demonstrate how the development and teaching of online college-level ESL reading and writing courses is a viable, logical, progressive, and efficient endeavor. In fact, the academic skills being taught, reading and writing, are the very same fundamental skills underlying all online classroom communication and interaction, so the very nature of the online learning environment helps promote and develop students’ reading and writing skills. Those interested in developing and/or teaching online ESL reading and writing courses will learn how to effectively integrate and organize a learning management system (LMS) with cutting-edge Web 2.0 tools to make their online classes more user-friendly, more interactive through the use of video, voice and discussion boards, tutorials, as well as learn how to use them in unique ways. Doing so will allow teachers to engage students by adapting teaching methodologies that are proven effective in traditional classrooms and applying them to the online environment, which will simultaneously promote both reading and writing skills and E-literacy, so students can function and compete, not only in an academic environment, but also in the ever changing digital age. Finally, teaching reading and writing online means more flexibility for students with competing home and workplace responsibilities and a much more tailored curriculum in a less threatening environment.
The Impact Of External Events On Corporate Risk Disclosures
Fred Pries, Ph.D., University of Guelph, Canada

ABSTRACT

To be useful, risk disclosures by public companies should reflect, among other things, changes in the external economic environment that impact the organizations. In this research, I examine the impact of the dramatic decline in oil prices in 2014 on the risk disclosures of public biofuels companies in the U.S. and Canada. I chose this example because oil prices have a significant effect on the competitiveness of biofuels. In this research, I examine whether and how biofuel companies reflected this external event in their risk disclosures. I also attempt to identify whether certain characteristics of individual biofuel companies make them more or less likely to reflect the impact of the change in oil prices.
Author requested nothing in proceedings.
What Can Trigger A Non-Buyer To Become A Buyer? An Investigation Of China’s Potential Luxury Goods Market

Dong Shen, Ph.D., California State University – Sacramento, USA
Jingxi Qian, Beijing Institute of Fashion Technology, P.R. China
Ying Jiang, Beijing Institute of Fashion Technology, P.R. China

ABSTRACT

The purposes of this study are: (1) to compare Chinese luxury goods buyers and non-buyers and examine their key differences; (2) to identify determinants of Chinese consumers final purchase of luxury goods; and (3) to explore the effective strategies of how to trigger more consumers to purchase luxury goods in China. A survey was conducted in 2016 summer in China through WeChat, a social media app, and a total of 1,549 returned questionnaires were useful. MANOVA and Logistic Regression were chosen for data analyses.

The results show that Chinese luxury goods buyers and non-buyers are significantly different in both cultural orientation and demographics. Specifically, they show significant differences in education level, family income, and location of residence. When cultural orientation is studied, they are different in long-term/short-term orientation, individualism/collectivism, and power distance. Chinese luxury goods buyers are often short-term oriented, individualism focused, and power/status focused, whereas non-buyers are more long-term oriented, collectivism focused, and less power/status focused. In addition, Chinese luxury products buyers are more likely to be female consumers who have higher family income, higher education level, and live in more advanced and developed cities. Chinese luxury goods non-buyers have strong interest in luxury goods and show strong purchase intention as well. The high price point is the main reason why they have not made a purchase yet. When they are ready to make the first purchase, they are more likely to buy luxury watches, clothing, cosmetics, or accessories in mainland China off-line. Implications and limitations are addressed.
Strategies For Developing Positive Teacher-Student Relationships With Children Of Poverty
Daljit Kaur, Francis Marion University, Florence, SC, US

ABSTRACT

Teachers and teacher education programs have struggled in recent years to address the diversity of students populating public school classrooms across the US. One aspect of that diversity garnering recent attention is poverty, its effects on children served in our public schools, and how best to prepare teachers for this diversity. This qualitative research was undertaken to describe the experiences of 18 teachers in the state of South Carolina teaching in high poverty schools. The participants filled out an online survey related to their overall teaching experience in high poverty schools. This paper focuses on strategies to develop positive teacher-student relationships with children of poverty.
Earnings Management Using Classification Shifting. Evidence From South Korea
Soo-Joon Chae, Ph.D., Kangwon National University, South Korea

ABSTRACT

Schipper(1989) defined earnings management as business practice that corporate management uses its accounting discretion in order to take abnormal return through financial reporting within the boundary of corporate accounting standards. There are numerous chances of earnings management during financial reporting process; at any time, anywhere, with various methods. Schipper mentioned two different earnings management methods; Accrual-based earnings management(hereafter, DA) and Real earnings management(hereafter, REM). Most previous research also focus on these two methods. However since DA intentionally increases(decreases) current period’s income, there will be reverse effect of decrease(increase) in future reported income. Using REM may temporarily increase the earnings by increasing the revenue through extensive discount policy or decreasing the expenses like advertising or R&D, but in long term it will damage the brand value thus opportunity costs may arise. However, overstatement of operating earnings by classification shifting has three advantages over the other proxies for earnings management. First, classification shifting only manages the operating earnings upward while net income remains unchanged, thus less opportunity cost occurs compared to other proxies. Second, firms using classification shifting are relatively less restrained by auditors and regulatory agency because net income remains unaffected. Last, overstatement of operating earnings affect the stock value greater because of high durability of operating earnings, thus capital market may be deceived by giving such firms better evaluation. Overall, classification shifting has high potentials of being used by firm's management. However there is no research yet on examining the incentives for classification shifting and its relationship with internal/external corporate governance. This paper is to examine the detailed incentives for classification shifting, by using proxy derived from income statement. Also this paper examines whether internal/external audit system realize such earnings management and perform effective monitoring. Furthermore, I like to examine how classification shifting affects the accuracy of analysts' operating earnings forecast.

This paper provides comprehensive results about overstatement of operating earnings via classification shifting. Research results can be summarized as follows. First, managers overstate the earnings by classification shifting when SEO and sales through insider trading occur. Second, when the quality of external auditors and IACS is superior, firms may use classification shifting for earnings management. At last, analysts’ forecast accuracy on earnings is decreased for the firms with frequent classification shifting in order to manipulate the earnings upward. This paper can be helpful for regulatory agencies responsible for quality of financial reporting when they supervise or audit the quality of firm’s financial reporting. As for investors, this paper contributes the need of detailed review on financial statements of firms facing specific capital market situations for investor’s decision making.

Keywords: Classification Shifting, Earnings Management, Corporate Governance, Seasoned Equity Offering, Insider Trading, Analyst Forecast
Evaluating Environmental Performance: A Balanced Scorecard Approach
Prof. Inaam M. Al-Zwaylif, Ph.D., CMA, University of Jordan, Jordan

ABSTRACT

Environmental aspects have been recognized by today’s organizations as the most important components of value creation that would contribute to the achievement of the goals and success in the future. The purpose of this study is to propose an Environmental Balanced Scorecard (EBSC) model to evaluate environmental performance in business organizations. It also aims to illustrate how the environmental performance aspects can integrate into the Balanced Scorecard (BSC). To achieve the goals of the study, the descriptive analytical approach was adopted for its suitability for the purpose of the study. An EBSC model was developed to evaluate environmental performance with proposed four perspectives and environmental strategic objectives within each perspective. The four perspectives are the customer, internal process, learning and growth and financial. The proposed model will help managers not only to evaluate the environmental performance, but also to plan, manage and control organization’s environmental activities. In addition, it can serve as a template for the organizations which aims to create environmental awareness and pursue environmental sustainability.

Keywords: Environmental Performance, Evaluation, Balanced Scorecard

1. INTRODUCTION

In recent years, the environmental impact of business organizations has been recognized as a serious problem due to increasing pollution, legislation, and stakeholders pressure to fulfill environmental protection requirements and standards. Therefore, environmental performance evaluation has become the vital and indispensable aspect of today’s organizations. So, many environmental management systems have been proposed to deal with environmental performance. One of the popular performance measurement tools, the BSC, integrates measures derived from strategy.

In this context, the objective of this paper is to propose an EBSC model to evaluate environmental performance in organizations. It also aims to illustrate how the environmental performance aspects can integrate into the BSC. The remainder of the paper is organized as follows. The next section provides the theoretical background and briefly reviews the previous literature addressing the performance measurement with the BSC, environmental performance evaluation and integration of the environmental indicators into the BSC. Then, the third section describes the research Methodology. After there, the fourth section proposes an EBSC for environmental performance evaluation. Finally, the last section presents the summary and conclusions.

2. THEORETICAL BACKGROUND AND LITERATURE REVIEW

2.1 Balanced Scorecard Model

It is known that the traditional performance evaluation system focus on measuring the financial performance and doesn’t reflect the value of most intangible assets, which represent an important aspect of the market value of the organizations as knowledge and skill among workers, relationships with customers and managers, and management expertise, company’s environment. Thus, financial framework cannot provide a comprehensive picture of performance.

In today’s competitive environment, financial performance measures are not sufficient in themselves; they should be integrated with nonfinancial measures in a well-designed performance measurement system. Financial performance measures summarize the results of past actions and nonfinancial performance measures concentrate on current
activities, which will be drivers of future financial performance (Hilton, 2002).

For these purposes, the BCS was developed by Kaplan and Norton in 1990 as a performance management device. It generally involves identifying a set of performance measures that are related to and drive strategy implementation (Kaplan and Norton, 1992; Kaplan and Norton, 1996a). The BSC is a systematic approach to performance measurement that translates an organization’s strategy into clear objectives, measures, targets, and initiatives, and integrates an appropriate mix of short- and long-term financial and non-financial performance measures used across the organization. To implement the BSC the organization should articulate goals for time, quality, performance and service and then translate these goals into specific measures (Kaplan and Norton, 1992). The BSC approach offers a guide for what should be measured to reach the balance of the implications in all functional areas, resulting from the strategic goal (Punniyamoorthy and Murali, 2008). It is a general and flexible approach to performance measurement and can be adapted to work in companies, public sector, and nonprofit enterprises. The BSC measures organizational performance across four different but linked perspectives that are derived from the organization’s vision, strategy, and objectives (Atkison et al, 2007). The four measurement perspectives in the BSC, figure (1), are:

- **Financial perspective**: Focuses on desired financial results. The measures chosen for this perspective include many ratios or financial items, such as return on investment, operating income, residual income, inventory turnover, and revenue growth.
- **Customer perspective**: Focuses on meeting customer needs, including product design, order taking, delivery, and post-sales service. Measures for this perspective address factors that relate to customer satisfaction, such as: customer retention, market share, lead time, Defects, and customer complaints.
- **Internal process perspective**: Focuses on the methods and practices used inside the organization to produce and deliver products. The internal business process perspective identifies the critical operating, innovation, post-sales service. Measures for this perspective address factors such as: cycle time, new product introductions, technological capability, order response time, and capacity utilization.
- **Learning and growth Perspective**: Focuses on the future-new strategies, continuous improvement, employee learning, etc. Measures for this perspective address factors such as: employee skills, industry leadership, new patents, and organizational learning.

The measures in the four perspectives are linked together on a cause-and-effect basis. For example, learning is necessary to improve internal business processes, which in turn improves the level of customer satisfaction, which in turn improves financial results. Organizations that use the BSC is not necessarily committed to apply the four perspectives of the BSC but could modify the model according to the requirements of their work (Cullen et al., 2003).

However, many organizations failed in building a BSC. Therefore, organizations should be aware of the common pitfalls in developing a BSC, which include the following: (a) senior management is not committed; (b) scorecard responsibilities don’t filter down; (c) the scorecard is treated as a one-time event; and (d) the BSC is treated as a system or consulting project (Atkison et al., 2007).
Although the traditional BSC contains four perspectives; i.e., financial, customer, internal processes, and learning and growth, Kaplan and Norton (1996c) stated that the number of perspectives in the BSC is discretionary and one or more additional perspective may be added because this number depending on industry circumstances and a business unit's strategy. Many researchers added one or more additional perspective. Alanati, (2004) added “community development service” and “general safety” perspectives to the traditional BSC to measure the performance of Jordanian contracting companies. Maltz et al. (2003) stated that Best Foods added a “people development” perspective to its traditional BSC to emphasize the strategic importance of human resource management. Aljabiri (2005) introduced two perspectives; consideration of compliance with laws and external suppliers, for evaluating the performance in the sector of communications in Jordan. Epstein and Wisner (2001) focused on using a fifth BSC perspective to implement sustainability as a strategic objective. Abufutha (2006) advocated using additional BSC categories to evaluate the performance of Islamic banks in Jordan, which are: “rules of transactions that are consistent with the sharia (Islamic law)” and “control rules and procedures” perspectives. The Nova Chemicals Corporation added a “social” perspective to its BSC to highlight the importance of community (Atkinson and Epstein, 2001). AL-Khatatneh and AL-Sa’aydeh (2010) discussed using a “company’s environment” as a fifth perspective for evaluating strategic performance. Malgwi (2014) demonstrated a modified BSC to assess the cost of insecurity in the North Eastern Nigeria. Van Grembergen and Van Bruggen (1997) adjusted the traditional form of BSC to evaluate IT department. They created four new perspectives: corporate contribution, customer (User) orientation, operational excellence, and future orientation. Chlistalla and Schaper (2009) modified the generic BSC by adding risk management as a separate perspective and by integrating competition and IT. Kim et al. (2014) applied a combined BSC and analytical hierarchy process to better understand web evaluation process. Their modified BSC consists of four perspectives: technical, marketing, customer, and internal perspectives.

Source: Kaplan and Norton (1996b).
2.2 Environmental Performance Evaluation of Business Organizations

Environmental performance evaluation is defined by the ISO 14031 (International standards Organization (ISO), 1999) as “a process to facilitate management decisions regarding an organization’s environmental performance by selecting indicators, collecting and analyzing data, assessing information against environmental performance criteria, reporting and communicating and periodically reviewing and improving this process”. According to ISO 14031 environmental performance evaluation indicators can be divided into groups:

- Environmental condition indicators: providing information for organization’s external management.
- Environmental performance indicators: providing information for the organization's internal operations. These indicators comprise the management performance indicators and the operational performance indicators.

The report of the United Nations conference on trade and development (United Nations, 1997) established a set of environmental evaluation indicators, which consist of eight domains: the ultimate indicator of environmental impact, emissions and waste indicators, input indicators, resource consumption indicators, efficiency indicators, risk indicator of potential environmental impacts, customer indicators and financial indicators. World Business Council for Sustainable Development (WBCSD) advocated the eco-efficiency indicators to measure the environmental performance of organizations (Verfaillie and Bidwell, 2000). These indicators are divided into core indicators and secondary indicators. Also, Global Reporting Initiative (GRI) helps organizations understand and communicate the impact of organization on the environment through produce standards for sustainability reporting. The GRI Guidelines set out the guidelines for organizations to measure and report their economic, environmental and social performance (GRI, 2002).

Based on the initiatives of the ISO 14031, the GRI and the eco-efficiency guide of the WBCSD, Kolk and Mauser (2002) classified environmental performance indicators into the following three categories:

- Environmental management indicators: provide information related to the efforts of the management to influence the environmental performance of the organization’s operations. These indicators are concerned with the policy, vision, planning activities, practices, procedures, and organizational structure of environmental management.
- Environmental condition indicators: provide information about the direct impacts of the organization’s operations on the environment, such as the air, water and soil pollution, ozone layer thickness and global average temperature.
- Environmental performance indicators: They are divided into operational and impact indicators. The operational performance indicators provide information about the environmental performance of specific organization’s operations, and related to inputs (materials, natural resources, energy etc.), whereas the impact performance indicators provide information about the outputs of the organizations’ operations, and related to products, wastes and emissions resulting from the organization’s operations.

Environmental performance indicators need to satisfy some requirements in order to achieve the desired goals. They need to be relevant to the environmental objectives of the organization and the requirements of stakeholders, and be understandable by non-specialists. Moreover, they should be reliable, comparable in various forms, measurable and verifiable, and be combined with an overall evaluation of organization (Perera et al., 2013).

2.3 Integration of Environmental Aspects in the Balanced Scorecard

In response to increasing interest in sustainability, models for sustainability performance evaluation are increasingly being introduced. These models include environmental, social and economic aspects of enterprise performance and address different dimensions of environmental performance (Veleva and Ellenbecker, 2001; GRI, 2002; Azapagic, 2004). Various studies have proposed a BSC format to incorporate environmental aspects into the strategic performance measurement system (e.g., Figge et al., 2002; Hubbard, 2009; Alewine and Stone, 2009; Kaplan and Wisner, 2009). Through the BSC, organizations can delineate the relationship between Sustainability objectives and outcomes with corporate strategy and profitability, e.g., environmental, social, and economic objectives (Butler et al.,
On the other hand, an important decision for organizations is how to incorporate environmental aspects in their BSC. Management must decide on the manner in which the environmental aspects will be integrated into its BSC because the presentation of performance indicators is important for performance evaluation and in communicating strategic priorities (Kaplan and Norton, 2004; Malina and Selto, 2001). Figge et al. (2002) discussed three Options for integrating environmental aspects in the BSC:

1- Integrating environmental aspects in the four BSC perspectives: environmental aspects can be subsumed under the four existing BSC perspectives through strategic elements, objectives and indicators. Using this approach, environmental aspects become an integral part of conventional BSC and integrated within the chain of cause and effect. These aspects should be integrated in the market system. Therefore, this approach is especially relevant for strategic environmental aspects that are already integrated in this system (Figge et al., 2001).

2- Adding a fifth perspective to the balanced scorecard: Kaplan and Norton pointed out that a company-specific creation of a BSC may involve adding or renaming a perspective. As noted earlier, many environmental aspects are not integrated into a market system as the standard BSC perspectives reflect only the market system. So, adding a fifth perspective (environmental perspective) to the BSC is justified when environmental aspects from outside the market system, consider strategic core aspects of the strategy of the organization.

3- Developing a separate environmental balanced scorecard: the third approach to including the environmental aspects in the BSC is based on the creation of a separate EBSC in order to be used by the environmental department internally. The design and implementation of a special EBSC have to be connected with a standard BSC. In other words, EBSC is not independent from conventional BSC. With proper linkage with BSC an organization could achieve good results relating environmental management system. Moreover, illustrating the environmental strategy across all four perspectives could help to improve this system (Hockerts, 2001). A separate EBSC is useful as it illustrates links between certain types of environmental performance and the strategic and financial objectives of an organization (Johnson, 1998).

Using a BSC model for evaluating the environmental performance of organizations has been advocated by many researchers. Li and Leigh (2010) developed an EBSC model with identified environmental strategic objectives and illustrated the links of these objectives across different levels in an environmental strategic mapping. Monteiro and Ribeiro (2011) addressed the different possibilities for the integration of environmental issues into the BSC, both in private and public entities. Callaghan et al. (2007) presented a new BSC approach to incorporating stakeholder interests and internal dimensions of the organization with the evaluation of the control environment. Wynder (2013) demonstrated that concern for the environment, perception of ecological risk, and assessment of financial risk, interact with scorecard classification to determine the weighting placed on environmental performance measures. Krivokapic and Jovanovic (2009) focused on an analysis of environmental management system integrated into the classical model of the BSC. They suggested that in this way, organizations could improve environmental performance through the implementation of the strategy. Dias-Sardinha and Reijnders (2005) designed a BSC to evaluate environmental and social performance of 13 large companies operating in Portugal.

3. RESEARCH METHODOLOGY

In order to attain the research aim which is to develop an EBSC to assist organizations in measuring and evaluating their environmental performance, the descriptive analytical approach was adopted for its suitability for the purpose of the study. An initial environmental BSC was developed based on the learning from the literature and relevant documentation regarding environmental standards. The initial proposed EBSC was sent to some managers of the Jordanian share holding companies and academic from reputable business school in Jordan. Several modifications have been made to the initial version based on their valuable feedbacks. The finalized EBSC model is presented in section 4.
4. THE PROPOSED ENVIRONMENTAL BALANCED SCORECARD MODEL

A proposed EBSC model is composed of four key perspectives (i.e., financial, customer, internal processes and learning and growth), environmental strategic objectives within each perspective and indicators for measuring and evaluating environmental performance. The suggested EBSC model is presented below.

First: customer perspective

Objectives: customer satisfaction.

Indicators:

- Degree of response to environmental issues by the organization through the control over the quality of products.
- Degree of effectiveness of the procedures that have been established to protect the environment.

Second: internal process perspective:

Objectives:

1- Existence of an effective environmental control system.

Indicators:

- Number of times of detection a contamination occurrence and given a warning for removing it.
- Number of surprise inspections.
- Reports of environmental control.
- Projects for developing environmental performance.

2- Quality of workforce.

Indicators:

- The average cost of training an employee.
- The number of prizes obtained by the organization.

3- Employee satisfaction.

Indicators:

- Number of rewards earned by employees who contribute to development and commitment to the environmental procedures related to the organization’s activities.
- Degree of quality and integration of work environment.

Third: learning and growth perspective:

Objectives:

1- Improve the environmental performance strategy.

Indicators:

- Number of training courses related to environmental field.
- Number of participants in training courses related to environmental field.
- Training costs in the environmental field.

2- Achievement general and specific objectives of the organization related to the environmental field.

Indicators:

- Degree of commitment to the laws and public policy requirements.
- Proportion of competition ability of organization to the peer organizations in the same industry.

Fourth: financial perspective

Objectives: reducing environmental costs.

Indicators:

- Proportion of environmental costs to total costs.
- Proportion of environmental costs to production costs.
- Proportion of environmental costs to sales.
- Proportion of environmental costs to capital.

Figure 2 presents the performance indicators which can be used to evaluate the environmental performance of an organization.
Figure 2. Performance indicators for EBSC

Customer Perspective Performance Indicators
- Degree of response to environmental issues by the organization through the control over the quality of products
- Degree of effectiveness of the procedures that have been established to protect the environment

Financial Perspective Performance Indicators
- Proportion of environmental costs to total costs
- Proportion of environmental costs to production costs
- Proportion of environmental costs to sales
- Proportion of environmental costs to capital

Internal Process Perspective Performance Indicators
- Number of times of detection a contamination occurrence and given a warning for removing it
- Number of surprise inspections
- Reports of environmental control
- Projects for developing environmental performance
- The average cost of training an employee
- The number of prizes obtained by the organization
- Number of rewards earned by employees
- Degree of quality and integration of work environment

Learning and Growth Perspective Performance Indicators
- Number of training courses related to environmental field
- Number of participants in training courses related to environmental field
- Training costs in the environmental field
- Degree of commitment to the laws and public policy requirements
- Proportion of competition ability of organization to the peer organizations in the same industry
5. SUMMARY AND CONCLUSIONS

Recently, environmental performance represents a major concern in many organizations. Therefore, a proper evaluation of environmental performance is becoming a requisite of most organizations. Many studies have shown that the BSC is an effective tool to evaluate environmental performance. In this study, an EBSC model was developed to evaluate environmental performance with proposed four perspectives and environmental strategic objectives within each perspective. The four perspectives are the customer, internal process, learning and growth and financial. However, it is necessary to link this scorecard with an already existing BSC. Also, the research highlights alternative methods of integrating environmental aspects in the BSC, which are: integrating environmental aspects in the four BSC perspectives, adding a fifth perspective that focuses on environmental goals and measures, and development of a separate EBSC. The proposed model will help managers not only to evaluate the environmental performance, but also to plan, manage and control organization’s environmental activities. In addition, it can serve as a template for the organizations which aims to create environmental awareness and pursue environmental sustainability. Further research is necessary to test the extent of suitability of this proposed model for application by the managers to encourage organizations to consider the adoption of EBSC.

BIOGRAPHY

Inaam M. Al-Zwyalif, Ph.D., CMA, is a Professor in the Department of Accounting at Al-Zyatoonha University of Jordan. She received her Ph.D. in accounting from Al-Mustansiriya University, Iraq, in 1996, and her CMA in 2012. She is also a member of IMA. Her main research interests are accounting information system and managerial accounting. She has published many papers in several refereed research journals and participated in many workshops and scientific conferences.

REFERENCES


Al-Atkison, A. and Epstein, M. 2001, Measure for measure: Realizing the power of the balanced scorecard, Financial and Management Accounting Committee (FMAC), IFAC.


Maltz, Alan. C., Shenhar, Aaron J. and Reilly, Richard R. 2003, Beyond the balanced scorecard: Refining the search


Author requested nothing in proceedings.
Author requested nothing in proceedings.
Author requested nothing in proceedings.
Educational School Leadership – An Indigenous Context
Dr. Maurice Manyfingers, University of Calgary, Canada

ABSTRACT

School superintendents/system leaders believe that all of their principals and school administrators should be accountable to the school boards that they serve. Therefore, school superintendents should engage in a yearly performance evaluation of their school principals and administrators that they supervise, as this is an important element associated with an administrator’s professional performance. It is also the belief that effective school superintendents/system leaders should review an annual Professional Growth, Supervision, and Evaluation Plan that is required to be submitted by all of their school principals and administrators. School principal/administrator growth, supervision and evaluation is a dynamic and on-going process and is necessary for the purposes of making decisions regarding employment, job performance and certification.

This presentation will focus on effective Professional Growth, Supervision and Evaluation Plans are based upon seven dimensions: (1) Fostering Effective Relationships, (2) Embodying Visionary Leadership, (3) Leading a Learning Community, (4) Providing Instructional Leadership, (5) Developing, Facilitating, and Sharing Leadership, (6) Managing School Operations and Resources, and (7) Understanding and Responding to the Community that they Serve. For each of these dimensions, the school superintendent is the evaluator using a five point scale from: (5) Exceeds Standards, (4) Above Standards, (3) Meets Standards, (2) Below Standards, (1) Needs improvement. This workshop session will examine how school superintendents can provide effective leadership and strategic direction to the school principals and administrators they supervise within their school board. As an indigenous school leader, the presenter will focus his workshop on educational leadership from an indigenous context.

AUTHOR INFORMATION

Dr. Maurice Manyfingers is the Deputy Superintendent of Education and Business Affairs with the Kainai Board of Education on the Blood (Blackfoot) Tribe in Southern Alberta, Canada. The Blood Tribe is the largest First Nation in Canada. Dr. Manyfingers received his Ph.D. in Educational Leadership from the University of Calgary in 2010. The title of Dr. Manyfingers’ University of Calgary Doctoral Dissertation was Jurisdiction, Resources and Accountability in Basic Education Programs: An Analysis of the Issues, Challenges and Current Realities Facing First Nations Students in Alberta (Canada). Dr. Manyfingers has been a teacher, principal, and school superintendent since 1988 and is a member Blood Tribe of the Blackfoot Confederacy.
Author requested nothing in proceedings.

Reza G. Hamzaee, Ph.D., Missouri Western State University, USA
Alec Guy, Missouri Western State University, USA
Brock Ryan, Missouri Western State University, USA

ABSTRACT

Policy making, put in place by the people for the purpose of serving the people, should be one of, if not the, most efficient institutions in the nation. In this research paper, the authors seek to critically evaluate U.S. policy making and its efficiency. Currently, the policy making process attempts to blend both democratic values and capitalistic traits. Disturbing habits, such as proposing omnibus, complicated bills proposed just before important deadlines, are being routinely practiced in congress. Negative externalities exist in the presence of extensive government regulation which ends up hurting the market it intended to help and wasting taxpayer money. This research also points out worrisome trends in the United States economy, such as the continued growth of the wealth gap and the lack of a fair minimum wage. Current legislatures have made no serious attempt to tackle either of these issues, and the authors explain why this is such a serious problem. The goal of the authors is no challenge the current policy making process in hopes that a recognition of its shortfalls may bring about changes in that process.
Portfolio Effects Of VIX Index Investment

Mitchell Ratner, Rider University, USA
Chih-Chieh (Jason) Chiu, Rider University, USA

ABSTRACT

This paper tests short-term and midterm VIX indexes as a hedge and safe haven asset against U.S. stock risk from January 2006 through July 2016. GARCH dynamic conditional correlation analysis indicates that VIX indexes are an effective hedge due to the consistent inverse relationship between the VIX and stocks. VIX indexes are a strong or weak safe haven in times of extreme stock market volatility. However, VIX indexes provide a strong safe haven during recent periods of turmoil including the 2008 global financial crisis, the 2011 downgrade of the U.S. government triple-A credit rating, and the 2016 U.K. vote to leave the E.U. (Brexit).

Diversification benefits of equity investment are diminishing due to rising correlations between stocks globally, especially during times of market turmoil. A popular strategy for reducing stock risk is investment in the Chicago Board Options Exchange Volatility Index (VIX), also known as the “fear gauge.” The VIX is a financial calculation that tracks the short-term volatility of options on the S&P 500 stock index. When investors are concerned about future market declines, they purchase more stock options which drives up the value of the VIX. When market fear is reduced, the VIX declines. An early version of the VIX began in 1986, and has an average measure of 20. It ranges from below 10 in calm times to over 50 during the peak of the 2008 financial crisis.

The VIX is not an investable asset. Futures on the VIX began trading in March 2004, while options first trade in February 2006. Depending on an investor’s level of sophistication, the VIX can be incorporated into a portfolio in several ways. Retail and professional money managers can directly purchase options and futures on the VIX, or invest indirectly more easily through exchange-traded products (ETPs) that are available since 2009.

A number of studies document the potential diversification benefits of adding the VIX to a portfolio of stocks. Given the recent creation of tradable VIX indexes and instruments, most studies focus on the portfolio benefits of the VIX during the 2008 global financial crisis (GFC). In this study we build on to the prior literature in three ways. First, in addition to the 2008 GFC, we include the 2011 downgrade of the U.S. government triple-A credit rating, and the 2016 U.K. vote to leave the E.U. (Brexit). Second, we test the VIX against a measure of extreme negative volatility in the equity markets (not necessarily a crisis period). Third, our methodology fully explores the time varying nature of the VIX utilizing GARCH dynamic conditional correlation analysis. (Some of the literature notes that the correlation between the VIX and equities is both dynamic and conditional, and attempt to control for it with subsample analysis or rolling correlations.)

This paper investigates the VIX as a hedge and safe haven asset against stock risk for a U.S. based investor. Following Bauer and Lucey [2010] an effective hedge is defined as an asset that is consistently uncorrelated or negatively correlated to stock price movements. A safe haven is an asset that is uncorrelated or negatively correlated to stock price movements during times of market turmoil. We find that the VIX provides a statistically strong hedge, and either a strong or weak safe haven against stock risk. The VIX is a consistently strong safe haven during all crisis periods tested. The midterm VIX is somewhat superior to the short-term VIX as both a safe haven and it’s impact on historical portfolio performance.

LITERATURE REVIEW

The interest in identifying alternative investment assets is growing for two related reasons. First, rising correlations among country stock markets over time diminish the advantages of international portfolio diversification [Eun and Lee, 2010]. Second, the contagion literature demonstrates excessive interdependence in stock markets during the 1987
U.S. stock market crisis, the 1994 Mexican Peso crisis, and the 1997 Asian Crisis [Forbes and Rigobon, 2002]. In addition, Markwat et al. [2009] find that global crashes are preceded by local and regional crashes as a domino effect.

Brenner and Galai [1989] are the first to create a volatility measure, named the “sigma index,” based on underlying futures and options contracts in 1986. The authors suggest that investors can hedge their stock positions to reduce the risk of market volatility by using such an index. The daily VIX index is created by Whaley [1993] and introduced in January 1993. Various reformulations of the VIX occur since the early 1990s (Whaley [2009]).

There is some disagreement in the literature regarding the benefit of investing in the VIX that warrants further investigation. Daigler and Rossi [2006] conclude that adding a volatility asset to the S&P 500 stock portfolio outweighs the disadvantages. The study illustrates an improvement to the risk-return profile using simulated VIX data from 1992-2002 as exchange traded products are not yet available in the marketplace. Moran and Dash [2007] demonstrate the negative correlation between the VIX and stock returns. They find that a small allocation to VIX futures has potential to reduce stock risk and improve portfolio efficiency. The authors suggest that a longer dataset is needed to fully investigate this benefit. Importantly, they also note that a volatility series is not return generating, and has an expected long-term return of zero. The addition of transaction costs can further erode the benefit of investing in a volatility series.

Szado [2009] indicates that the VIX correlation with stocks is both conditional and time-varying. Due to its dynamic nature, the VIX functions more as a diversifier than as a long hedge. However, the VIX is an effective hedge during the 2008 global financial crisis. As the VIX is mean reverting and clusters, investment returns in a volatility index are minimized over longer periods.

Chen et al. [2011] shows that short-term VIX futures provide a benefit by expanding the efficient frontier. Warren [2012] observes that the VIX outperforms during periods of weakness in the equity markets, but generally underperforms over time. This study utilizes VIX futures, variance swaps, and forward variance swaps. Conversely, Deng et al. [2012] state that exchange traded products (ETPs) tied to VIX futures do not reduce the variance of equity portfolios, and that using ETPs significantly reduce the returns of equity and bond portfolios. Likewise, Goltz and Stayanov [2013] also conclude that the VIX is not an effective hedge for passive investors.

Hill [2013] shows that both short-term and mid-term VIX futures products are candidates for tail risk hedging in portfolios, but short-term VIX futures are the most attractive for risk management. In contrast, Whaley [2013] notes the expansion of trading opportunities provided by exchange traded volatility products. The author recommends a limited number of ETPs, specifically those that provide interest accruals. As buy-and-hold investments, Whaley [2013] finds that short-term ETPs are very likely to lose money compared with midterm ETPs.

More recently, Bahaji and Aberkane [2015] show that VIX futures improve passive portfolios, but may yield lower utility. Jung [2016] demonstrates with simulated data that VIX futures provide hedging characteristics with caveats. Alexander et al. [2016] conclude that ETPs are effective hedges during the 2008 global financial crisis, but underperform equity portfolios without ETP investment in the long-term.

DATA

A variety of exchange traded products including ETNs and ETFs are available for investment since 2009, and are generally growing in popularity since their creation. The credit quality of the issuer (for ETNs), rollover costs, reliability of precise tracking to the VIX, and contango effects are common limitations of exchange traded volatility products. However, as a potential safe haven asset, the liquidity of instruments based on the VIX actually improve during market turmoil unlike some other traditional hedges (Bahaji and Aberkane [2015]).

There are two main proxies for most ETPs that are available to risk managers, investors, and volatility traders: the S&P500 VIX Short-Term Futures Index (STVIX) and the S&P500 VIX Midterm Futures Index (MTVIX). The STVIX maintains a constant one-month rolling position in first and second month VIX futures contracts. The MTVIX measures the volatility of the fourth, fifth, sixth, and seventh month VIX futures, and seeks to maintain a five-month constant maturity. Both indexes are rebalanced on a daily basis and comprised of VIX spot movements, futures roll-
yield costs, and collateral interest. While officially launched in January 2009, back-tested index data is available from December 2005.

Daily data for the total return series of the STVIX and MTVIX are collected from the DataStream database for the period January 2006 through July 2016. The total return of the S&P 500 composite index (S&P500) represents investment in U.S. stocks. To achieve stationarity, all series are transformed into first-difference form. Exhibit 1 contains a table of descriptive statistics for the three series.

<table>
<thead>
<tr>
<th>Index</th>
<th>Observ.</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>STVIX</td>
<td>2662</td>
<td>-0.1365</td>
<td>4.1444</td>
<td>-18.8480</td>
<td>32.7081</td>
</tr>
<tr>
<td>MTVIX</td>
<td>2662</td>
<td>-0.0326</td>
<td>2.0610</td>
<td>-9.1488</td>
<td>13.4130</td>
</tr>
<tr>
<td>SP500</td>
<td>2662</td>
<td>0.0376</td>
<td>1.2909</td>
<td>-9.0259</td>
<td>11.5811</td>
</tr>
</tbody>
</table>

The daily mean return is negative for the STVIX (-0.1365%) with a standard deviation of 4.1444%. The mean return for the MTVIX (-0.0326%) is significantly less negative with a lower standard deviation (2.0610%). By contrast, the S&P500 mean (0.0376) is positive with a relatively lower standard deviation (1.2909%) than both VIX indexes. While the MTVIX has a negative mean return, the minimum (-9.1488%) and maximum (13.4130%) return values are comparable to those of the S&P500 (-9.0259% to 11.5811%). The STVIX has a wider variation in returns over time from -18.848% to 32.7081% compared with the MTVIX. These findings are consistent with Whaley [2013] regarding the potential losses associated with short-term VIX investments.

Exhibit 2 shows a time series graph of the STVIX, MTVIX, and the S&P500 in non-differenced form from January 2006 through July 2016. The levels demonstrate the negative relationship between the VIX indexes and stock prices, especially during the 2008 financial crisis period. This is consistent with prior studies, and suggests that the VIX is a potential hedge against stock risk. The MTVIX appears to be more responsive to changes in the S&P500 compared with the STVIX, which is potentially advantageous for hedging purposes.

EXHIBIT 2:

To show the potential risk reduction benefits of investing in volatility indexes, efficient portfolios are formed from
January 2006 through July 2016. Using monthly total return data, Exhibit 3 contains efficient frontiers of the STVIX added to S&P500, and the MTVIX added to the S&P500. The portfolios are mean-variance efficient for a given level of expected return, and the model does not allow for short sales or risk free investments. The portfolio weights are constrained to have nonnegative values. The upper right hand corner of the graph at the convergence of the two lines represents a 100% investment in the S&P500. Adding investment in either VIX index appears to reduce portfolio risk with a relatively smaller reduction in portfolio return. The MTVIX clearly provides superior performance with a larger return-to-risk profile. Diminishing benefits will ultimately occur as investment in the VIX indexes are maximized as shown. As this procedure is performed on an \textit{ex post} basis for illustrative purposes, we are not providing specific recommendations for asset allocations.

### EXHIBIT 3.

#### METHODOLOGY

Dynamic conditional correlation (DCC) is a technique developed by Engle [2002] to examine time-varying correlation. The procedure uses GARCH to generate time-varying estimates of the conditional co-movement between assets implemented as:

\[
r_t | I_{t-1} \sim N(0, H_t) \tag{1}
\]

\[
H_t = D_t R_t D_t \tag{2}
\]

where \( r_t \) is the \( k \times 1 \) demeaned vector of variables conditional on information \( I_{t-1} \), and is assumed to be conditionally multivariate normal. \( H_t \) is the covariance matrix where \( R_t \) is the \( k \times k \) time-varying correlation matrix, and \( D_t \) is the \( k \times k \) diagonal matrix of conditional standardized residuals estimated from the univariate GARCH models.

The general form equation of the likelihood function of the estimator is given by:

\[
L = -0.5 \sum_{t=1}^{T} \left( k \log(2\pi) + 2 \log \left( |D_t| \right) + \log( |R_t| ) + \varepsilon_t R_t^{-1} \varepsilon_t \right) \tag{3}
\]

There are two steps in this procedure. The volatility component \( D_t \) is maximized in the first step by replacing \( R_t \) with a \( k \times k \) identity matrix. This results in reducing the log likelihood to the sums of the log likelihoods of the univariate
GARCH equations. The first order univariate GARCH models are estimated for each VIX index and the S&P500 using the Glosten et al. [1993] model allowing for asymmetries:

\[ h_t = c_0 + a_t \varepsilon_{t-1}^2 + b_t h_{t-1} + d_t \varepsilon_{t-1}^2 \text{I}_{t-1} \]

(4)

where \( h_t \) is the conditional variance, \( d_t \) is the asymmetry term, and \( \text{I}_{t-1} = 1 \) if \( \varepsilon_t < 0 \), otherwise \( \text{I}_{t-1} = 0 \). The correlation component \( R_t \) is maximized in the second step:

\[ R_t = (1 - \alpha - \beta) \bar{R} + \alpha \varepsilon_{t-1} \varepsilon_{t-1} + \beta R_{t-1} \]

(5)

where the values of the DCC parameters \( \alpha \) and \( \beta \) are determined. If \( \alpha \) and \( \beta \) are zero, then \( R_t \) reduces to \( \bar{R} \), which would indicate that the constant correlation model is appropriate.

Subsequent to the GARCH estimation, the time varying correlations \( R_t \) are extracted from model (5) into a separate time series for each VIX index. \( R_t \) are regressed on dummy variables representing market turmoil to test each VIX index as a hedge and safe haven asset against stock risk. The following hypotheses are formulated:

\( H_1 \): The VIX does not provide a hedge against stock risk in the S&P500.

\( H_2 \): The VIX is not a safe haven against extreme negative moves in the S&P500.

The hypotheses are assessed with models (6) and (7):

\[ R_t = \gamma_0 + \gamma_1 D(r_{stock} \text{q}_{10}) + \gamma_2 D(r_{stock} \text{q}_5) + \gamma_3 D(r_{stock} \text{q}_1) \]

(6)

where \( D \) represent dummy variables that capture extreme movements in the S&P500 at the 10%, 5%, and 1% quantiles. The VIX is a weak hedge if \( \gamma_0 \) are insignificantly different than zero, a strong hedge if \( \gamma_0 \) is significantly negative, or a diversifier if \( \gamma_0 \) is significantly positive. The VIX is a weak safe haven if the \( \gamma_1 \), \( \gamma_2 \), or \( \gamma_3 \) coefficients are insignificantly different from zero, or a strong safe haven if \( \gamma_1 \), \( \gamma_2 \), or \( \gamma_3 \) are significantly negative. Significantly positive \( \gamma_1 \), \( \gamma_2 \), or \( \gamma_3 \) coefficients indicate that the VIX is not a safe haven during the extreme stock volatility.

To examine the VIX as a hedge or safe haven against stock risk during a period of global economic or political crisis, a modified version of a dummy variable regression is empirically tested as:

\[ R_t = \gamma_0 + \gamma_1 D(\text{GFC}) + \gamma_2 D(\text{UScredit}) + \gamma_3 D(\text{Brexit}) \]

(7)

where a dummy variable is set to one at the start of three periods of crisis: the global financial crisis (9/10/08), the downgrade of the U.S. government triple-A credit rating by Standard & Poor’s (8/5/11), and the U.K. vote to exit the European Union (6/23/16). The VIX is a weak hedge if \( \gamma_0 \) is insignificantly different than zero, a strong hedge if \( \gamma_0 \) is significantly negative, or a diversifier if \( \gamma_0 \) is significantly positive. The VIX is a weak safe haven in specific crisis periods if the \( \gamma_1 \), \( \gamma_2 \), \( \gamma_3 \) coefficients are insignificantly different than zero or a strong safe haven if they are significantly negative. Significantly positive \( \gamma_1 \), \( \gamma_2 \), \( \gamma_3 \) coefficients indicate that the VIX is not a safe haven during the crisis period.

**EMPIRICAL RESULTS**

Descriptive statistics for the daily dynamic conditional correlations between the STVIX with the S&P500 and the MTVIX with the S&P500 are provided in Exhibit 4. The mean correlation for the STVIX (-0.8352) and the MTVIX (-0.7779) are both highly negative indicating potentially beneficial hedging properties. The standard deviation for the STVIX (0.0446) shows lower volatility than the MTVIX (0.0608). Lower volatility suggests a lower level of responsiveness to changes in stocks. The dynamic correlations are graphically presented in Exhibit 5. The graphs demonstrate wider variability of the MTVIX compared with the STVIX, and also illustrate the non-constant (i.e., dynamic) nature of the correlations over time.
EXHIBIT 4:

<table>
<thead>
<tr>
<th>Index</th>
<th>Observ.</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>STVIX</td>
<td>2661</td>
<td>-0.8352</td>
<td>0.0446</td>
<td>-0.9582</td>
<td>-0.6561</td>
</tr>
<tr>
<td>MTVIX</td>
<td>2661</td>
<td>-0.7779</td>
<td>0.0608</td>
<td>-0.8987</td>
<td>-0.5026</td>
</tr>
</tbody>
</table>

EXHIBIT 5:

Hedging Analysis

Two models are estimated to test the VIX as a hedge and safe haven against stock risk. First, the time series of the DCC coefficients \( R_t \) between each VIX index and the S&P500 are regressed on dummy variables representing three quantiles of extreme negative stock market volatility. Second, the DCC coefficients \( R_t \) are regressed on dummy variables representing the 2008 global financial crisis, the 2011 downgrade of the U.S. government triple-A credit rating by Standard & Poor’s, and the 2016 U.K. vote to leave the E.U. (Brexit).

Exhibit 6 shows the estimates of regressions based on model (6). The DCC coefficients are regressed on a constant and three dummy variables representing levels of extreme negative stock volatility quantiles of 10%, 5%, and 1%. The “hedge” column represents the model constant \( \gamma_0 \), which shows a negative relationship between stocks and the STVIX (-0.8334), and the MTVIX (-0.7749), with significance at the 1% level. A significant negative value indicates that both VIX indexes are strong hedges against stock risk, and leads to a rejection of the first hypothesis (H1).

The stock quantile regression coefficients \( \gamma_1, \gamma_2, \gamma_3 \) represent the safe haven characteristics of the VIX and stocks. Significant negative coefficients indicate a strong safe haven in the 10% stock quantile in both STVIX (-0.0187) and the MTVIX (-0.0314). In the more extreme 5% quantile, neither VIX index is significantly different than zero. Insignificant coefficients indicate that both VIX indexes are a weak safe haven in this quantile. In the most extreme 1% stock quantile, both VIX indexes are strong safe havens, but the MTVIX (-0.0314) shows greater statistical significance than the STVIX (-0.0160). As both VIX indexes are either a strong or weak safe haven, the second hypothesis (H2) is rejected.
EXHIBIT 6:
The VIX as a hedge and safe haven against stock risk during extreme stock volatility.

<table>
<thead>
<tr>
<th>Index</th>
<th>Hedge (γ₀)</th>
<th>10% (γ₁)</th>
<th>5% (γ₂)</th>
<th>1% (γ₃)</th>
</tr>
</thead>
<tbody>
<tr>
<td>STVIX</td>
<td>-0.8334***</td>
<td>-0.0187***</td>
<td>0.0024</td>
<td>-0.0160*</td>
</tr>
<tr>
<td>MTVIX</td>
<td>-0.7749***</td>
<td>-0.0207***</td>
<td>-0.0033</td>
<td>-0.0314***</td>
</tr>
</tbody>
</table>

Note: ***,**,* indicates significance at the 1%, 5%, and 10% levels, respectively.

Model: \( R_t = \gamma_0 + \gamma_1 D_{stock_10} + \gamma_2 D_{stock_1} + \gamma_3 D_{stock_1} \)

The final model tests the VIX as a hedge and safe haven during periods of financial and political crisis based on model (7), and the results are presented in Exhibit 7. The model constant \(\gamma_0\) for the “hedge” column is statistically consistent with model (6). During the 2008 global financial crisis, significant negative coefficients indicate that the STVIX (-0.0495) and the MTVIX (-0.0982) are strong safe havens from stock risk. Likewise, during the 2011 downgrade of the U.S. government credit rating, significant negative \(\gamma_2\) coefficients are observed in both the STVIX (-0.0506) and the MTVIX (-0.0679). Lastly, during the Brexit vote period the STVIX (-0.0754) and the MTVIX (-0.0968) indexes are strong safe havens. In all cases, the coefficients of the MTVIX are more negative than the STVIX, which may demonstrate greater safe haven properties.

EXHIBIT 7:
The VIX as a hedge and safe haven against stock risk during financial and political crises.

<table>
<thead>
<tr>
<th>Index</th>
<th>Hedge (γ₀)</th>
<th>GFC (γ₁)</th>
<th>UScredit (γ₂)</th>
<th>Brexit (γ₃)</th>
</tr>
</thead>
<tbody>
<tr>
<td>STVIX</td>
<td>-0.8344***</td>
<td>-0.0495***</td>
<td>-0.0506***</td>
<td>-0.0754***</td>
</tr>
<tr>
<td>MTVIX</td>
<td>-0.7760***</td>
<td>-0.0982***</td>
<td>-0.0679***</td>
<td>-0.0968***</td>
</tr>
</tbody>
</table>

Note: ***,**,* indicates significance at the 1%, 5%, and 10% levels, respectively.

Model: \( R_t = \gamma_0 + \gamma_1 D(GFC) + \gamma_2 D(UScredit) + \gamma_3 D(Brexit) \)

CONCLUSIONS

This study investigates the hedging properties of the VIX index, a growing popular strategy for reducing stock risk. We add to the literature by evaluating the hedging and safe haven characteristics of investing in the short-term VIX index and the midterm VIX index during times of extreme negative volatility in the stock market, and during times of financial and political crisis. Our investigation goes beyond the 2008 global financial crisis that is the subject of some recent studies, and we utilize GARCH dynamic conditional correlation (DCC) to examine the time varying relationship between the VIX indexes and stocks.

The major findings are as follows: first, negative mean DCC coefficients indicate that the VIX indexes are inversely related to stocks, supporting the diversification potential of investing in volatility indexes. Second, results of DCC coefficients regressed on dummy variables representing stock market volatility, and periods of financial and political crisis, show that the VIX indexes are a strong hedge against stock risk. Third, during periods of extreme negative stock market volatility, the VIX indexes are a strong or weak safe haven against stock risk. Fourth, the VIX indexes are a strong safe haven against stock indexes during the 2008 global financial crisis, the 2011 downgrade of the U.S. government credit rating, and during the 2016 U.K. Brexit vote.

The results support the potential role of adding VIX index investment to a portfolio of U.S. stocks. VIX investment provides a significant hedge and safe haven during times of turmoil in the stock market. Based on historical data, a small investment in the VIX increases the return-to-risk performance of an S&P500 stock portfolio. The findings indicate that the midterm VIX index provides superior return-to-risk results, and a larger hedge response compared with the short-term VIX index.
REFERENCES


Involving Students In Collaborative Learning And Learning Strategies: A Comparative Analysis Of Online And On-Campus Students

Emtinan Alqurashi, Duquesne University

ABSTRACT

This study used a large-scale survey of student engagement for the years 2014 and 2015 in universities across the US. It examined the differences between the participation rates of junior online students and junior on-campus students’ in collaborative learning and learning strategies. Online and on-campus students’ perceived satisfactions were also examined by whether or not they participated in collaborative learning and learning strategies. Overall, findings revealed that online students’ participation rates in collaborative learning were relatively lower than on campus students. However, their participation rates in learning strategies were relatively higher than on campus students. Of the three learning strategies items, both online students and on-campus students engaged most in identifying key information from reading assignments as part of a course requirement. Online students engaged least in reviewing your notes after class where on-campus students engaged least in summarizing what they learned in class or from course materials. Out of the four collaborative learning items, both online students and on-campus students engaged most in working with other students on course projects or assignments and least in preparing for exams by discussing or working through course material with other students. Online students who participated in collaborative learning and learning strategies reported slightly higher satisfaction compared to on-campus students who did not participate in learning strategies. This study suggests institutions should pay special attention to the needs of online students and develop strategies for promoting their collaborative learning and learning strategies participation.

Keywords: collaborative learning, learning strategies, online learning, students’ satisfaction

AUTHOR BIOGRAPHY

Emtinan Alqurashi is a doctoral candidate in the Department if Instruction and Leadership in Education at Duquesne University. Her research interests include online learning, students' learning experience, self-efficacy, online interaction, instructional technology knowledge, skills and dispositions.
“If You Can’t Beat ‘Em, Join ‘Em: Using Mobile Devices Effectively In And Out Of The Classroom”

Leslie Scamacca, LaGuardia Community College, USA
Nicole Lytle, LaGuardia Community College, USA

ABSTRACT

Smartphones and mobile devices have enhanced our lives. These devices help to manage tasks with applications that sync with our social media with events we’ve accepted, schedule appointments, and even allow us to plan and book an entire vacation. Mobile technology is often found in the hands of our students, and can be seen as an obstacle to learning within the classroom. Rather than compete with technology, two professors at LaGuardia Community College have decided to shift the educational paradigm, both in and out of the classroom, by combining experiential learning with mobile technology.

In this presentation, we will discuss classroom management, assignment creation and evaluation, and examinations through the experiential learning model, and demonstrate how incorporating mobile technology into the educational process enhances knowledge retention and excitement. For example, in Marketing studies, students examine effective social media practices to further business goals. Over the course of a semester, students identify one “sweetheart company” and analyze the social media implications related to course concepts. In the Travel, Tourism, and Hospitality curriculum, students use their devices to view and study global tourism destinations virtually.

We will discuss Kolb’s experiential learning model and explain how assignments using mobile technology complement this pedagogy. We will also establish a baseline for an introduction of mobile technology in the classroom, as well as some advanced practices and applications for Instructors looking to enhance their current curriculum. We will also discuss ways to overcome obstacles associated with the use of mobile devices in and out of the classroom.
The Effects Of Frontline Employees’ Challenge And Hindrance Stressors On Emotional Exhaustion, Job Satisfaction, And Turnover Propensity: The Moderating Role Of Resilience
Seonggoo Ji, Hanbat National University, South Korea
Ihsanullah Jan, Hanbat National University, South Korea

ABSTRACT

Frontline employees are performing the boundary spanning roles which provides them the platform to interact customers frequently. During their frequent face to face, voice to voice interactions frontline employees are expected to deliver for customers who are not friendly and display rude and hostile dysfunctional behaviors making the job environment stressful. Consequently these stressors contribute to negative personal and organizational outcomes like employee’s dissatisfaction, turnover and low productivity. However there are some challenging stressors which although attenuate the emotional exhaustion of frontline employees but accentuate job satisfaction, and mitigate turnover propensity.

The purpose of this study is of twofold; first, it identifies the customer challenging stressors which contribute for the personal growth and development of frontline employees and the customer hindrance stressors which aggravate negative personal outcomes. Secondly this study investigates the moderating role of resilience for countering the negative effects ofhindrance stressors. Additionally in line with job demand-resource theory we discussed about the leveraging of customer resources (i.e. participation, empathy and appreciation) for managing the psychological strains of frontline employees and their negative organizational outcomes.

Keywords: Challenge Stressors; Hindrance Stressors; Customer Demands; Customer Resources; Resilience.
Arbitrage Opportunity In Thailand Futures Exchange: An Empirical Study Of SET50 Index Options
Woradee Jongadsayakul, Kasetsart University, Thailand

ABSTRACT
This paper examines whether it is possible to make riskless arbitrage profits on SET50 Index Options using daily data from October 29, 2012, through March 30, 2016. The methodology is based on butterfly spread, which is a combination of a bull spread and a bear spread. The results show that it is possible for investors to make arbitrage profits on SET50 Index Options when considering only brokerage commissions, exchange fees, and interest on initial margin deposit. Their arbitrage opportunities are 5.03 percent. However, market friction imposed by bid-ask spread appears to have a significant effect on arbitrage opportunities to take advantage of the mispricing of butterfly spreads. When using bid-ask prices rather than closing prices, the arbitrageurs can earn riskless profit when employing long put butterfly spread, but their opportunities drop to 0.04 percent. Taking all transaction costs (brokerage commissions, exchange fees, interest on initial margin deposit, and bid-ask spread) into account, none of arbitrage opportunities exists in the SET 50 Index Options market.

Keywords: Arbitrage, Index Options, Butterfly Spread

INTRODUCTION
Thailand Futures Exchange (TFEX), the only derivative exchange in Thailand, was established on May 17, 2004. It currently trades both Futures and Options. While TFEX launched SET50 Index Futures as a futures first product on April 28, 2006, followed by Stock Futures, Gold Futures, Interest Rate Futures, Silver Futures, Crude Oil Futures, USD Futures, and Sector Futures, SET 50 Index Options is the only European options product traded in the options market. Although SET50 Index Options contract was launched on October 29, 2007 as the second product on TFEX, it has faced the liquidity problem. Therefore, to boost liquidity of SET50 Index Options, TFEX modified the contract specifications of SET50 Index Options on October 29, 2012. The two nearest monthly contracts were added, but the two farthest quarterly months were removed, resulting in four contract months (3 nearest consecutive months plus 1 quarterly month) in total. In addition, strike price interval of SET50 Index Options increased from 10 points to 25 points. The adjustment decreased the number of series from 5 in-the-money, 1 at-the-money, and 5 out-of-the-money series (5:1:5) to 2:1:2 (Securities and Exchange Commission, 2013). However, trading volume of SET50 Index Options is still low, only 0.63 percent in 2015. Since the liquidity of SET50 Index Options depends on its pricing efficiency, this paper examines whether it is possible to make riskless arbitrage profits from observed mispricing on SET50 Index Call or Put Options using daily data from October 29, 2012, through March 30, 2016. It focuses on call and put convexities, also referred to as butterfly spreads. The strategies not only use options, which are better than when both options and the underlying asset(s) are used, but also exclude any risk free asset.

Lertburapa (2015) is the first study of arbitrage opportunity in SET50 Index Options market. The paper examines riskless arbitrage opportunity under put-call parity which underlying asset is SET50 Index Futures. Long and short strategies are considered separately. The results inform that there are riskless arbitrage opportunities under violation of put-call-futures parity, when ignoring all transaction costs. However, after including all transaction costs, a number of riskless arbitrage opportunities reduce significantly to 1 percent. Since put-call-futures parity is a test of cross-market pricing efficiency of futures and options markets, the results could be biased due to possible futures mispricing. On the other hand, Jongadsayakul (2016) provides the box spread test of the SET50 Index Options market efficiency. It is appropriate for testing the efficiency of the SET50 Index Options market when SET50 index is not traded. Using
bid-ask prices rather than closing prices, the results show that the box spread arbitrage opportunities is less than 1%, and none of them is persisted on the following trading day. Considering transaction costs, the results therefore confirm the internal options market efficiency in the SET50 Index Options market. There is no adequate evidence to support the improvement of SET50 Index Options market efficiency over time. Since the box spread arbitrage strategy involves two pairs of call and put options having the same expiration date and the risk free asset, it is different from call and put convexities, which is the relative pricing efficiency test of call options alone or put options alone.

Many empirical studies have tested the internal pricing efficiency of the index options market such as Alkert and Tain (2000, 2001) and Capelle-Blancard and Mo Chaudhury (2001), etc. Alkert and Tain (2000) analyzes the efficiency of the S&P 500 index options market using daily data for the S&P 500 index and index options from January 1, 1986, through December 31, 1996. Bid-ask spreads and commissions are included in the analysis to show the effect of transaction costs on pricing efficiency. On each trading day during the test period, the three pricing relationships, the box spread, call and put spreads, and call and put convexity, are tested. The results show significant violations of arbitrage pricing relationships, particularly for the box spread relationship. There are few violations of call and put spreads and call and put convexities, which are less demanding tests of pricing efficiency than the box spread. There is no evidence that options market efficiency improved over time. Moreover, market frictions imposed by the bid-ask spread and commission costs appear to have a significant effect on arbitrageurs’ abilities to take advantage of arbitrage pricing relationships. Alkert and Tain (2001) investigate whether S&P 500 index options are priced correctly relative to one another by testing several arbitrage pricing relationships, which are boundary conditions, put-call parity, box spread, call and put spreads, and call and put convexities, both before and after the inception of Standard and Poor's Depository Receipts (SPDRs) trading on January 29, 1993. The investigation covers 24 month period from February 1, 1992, through January 31, 1994. The results show that some improvement in market efficiency over time. However, there is little evidence that the introduction of SPDRs improved the link between stock and index options markets. When transaction costs and short sales constraints are considered, there are very few violations in boundary conditions and put-call parity condition. However, violations of box spread condition remain frequent. Capelle-Blancard and Mo Chaudhury (2001) examine the efficiency of the French options market using intraday data on CAC 40 index options from January 2, 1997, through December 30, 1999. They test several no arbitrage conditions (lower boundary, put-call parity, box spread, call spread, put spread, call convexity and put convexity) taking transaction costs and short sale constraints into account. Their results support market efficiency as the frequency of arbitrage condition violation is low. With the shift to the Euro, they do not find any clear evidence of enhanced efficiency.

The paper proceeds as follows. A brief review of theoretical framework is given in section 2. The description of the data and a discussion of the testing methodology follow in section 3. The empirical results are presented in section 4, and section 5 concludes.

THEORETICAL FRAMEWORK

Although there are several theoretical conditions on arbitrage-free pricing of options, this paper focuses on call and put butterfly spreads. Throughout the paper we will use the following notation:

\[
\begin{align*}
C &= \text{price of a European call option;} \\
P &= \text{price of a European put option;} \\
K &= \text{exercise price;} \\
S &= \text{price of underlying asset;} \\
t &= \text{time to maturity of the option;} \\
r &= \text{interest rate.}
\end{align*}
\]

Butterfly spread requires purchase and sale of calls (puts), all having the same underlying asset and the same expiration date but differing in three exercise prices, where \(K_1 < K_2 < K_3\). The price of a call or put option is a convex function of the exercise price. Denoting \(J = C, P\), the no arbitrage convexity condition is expressed as follows (Schmidt, 2013):
Define \( \mu = \frac{(K_3 - K_2)}{(K_3 - K_1)} \), we have
\[
\mu J_1 + (1 - \mu) J_3 - J_2 \geq 0
\]

Throughout the paper we focus only on the case where \( K_2 = (K_1 + K_3)/2 \) and \( \mu = 1/2 \). Suppose the condition of convexity of option price with respect to exercise price is violated. An arbitrageur can make risk-free profit by purchasing one each of the two end strike options for every two middle strike options sold.

**Long Call Butterfly Spread (CB)**
\[
\frac{1}{2} C_1 + \frac{1}{2} C_3 - C_2 < 0
\]  
(1)

When the inequality (1) holds, this means that the price of middle call option is overvalued relative to a portfolio of the other two calls. An arbitrageur would then employ “Long Call Butterfly Spread”, which is a combination of a bull call spread (purchase of a call with exercise price \( K_1 \) and sale of a call with exercise price \( K_2 \)) and a bear call spread (sale of a call with exercise price \( K_2 \) and purchase of a call with exercise price \( K_3 \)). The long call butterfly spread involves a positive initial inflow of \( 2C_2 - C_1 - C_3 \) and nonnegative future payoff. The future payoff for each of the four possible price ranges of the underlying asset at expiration is shown in Table 1. Beyond the end exercise prices, the terminal payoff for the arbitrageur is zero. In between the end exercise prices, the arbitrageur would enjoy a positive payoff with the highest payoff occurring when the terminal index value is equal to the middle exercise price, \( S_T = K_2 \) (Figure 1).

**Long Put Butterfly Spread (PB)**
\[
\frac{1}{2} P_1 + \frac{1}{2} P_3 - P_2 < 0
\]  
(2)

When the inequality (2) holds, this means that the price of middle put option is overvalued relative to a portfolio of the other two puts. An arbitrageur would then employ “Long Put Butterfly Spread”, which is a combination of a bull put spread (purchase of a put with exercise price \( K_1 \) and sale of a put with exercise price \( K_2 \)) and a bear put spread (sale of a put with exercise price \( K_2 \) and purchase of a put with exercise price \( K_3 \)). The long put butterfly spread involves a positive initial inflow of \( 2P_2 - P_1 - P_3 \) and nonnegative future payoff. The future payoff for each of the four possible price ranges of the underlying asset at expiration is shown in Table 2. Beyond the end exercise prices, the terminal payoff for the arbitrageur is zero. In between the end exercise prices, the arbitrageur would enjoy a positive
payoff with the highest payoff occurring when the terminal index value is equal to the middle exercise price, $S_T = K_2$ (Figure 2).

Table 1: Cash Flows of the Long Call Butterfly Spread

<table>
<thead>
<tr>
<th>Actions</th>
<th>Initial Cash Flows</th>
<th>Cash Flows at the Time of Expiration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$S_T \leq K_1$</td>
<td>$K_1 &lt; S_T \leq K_2$</td>
</tr>
<tr>
<td>Buy 1 call with $K_1$</td>
<td>$-C_1$</td>
<td>$S_T - K_1$</td>
</tr>
<tr>
<td>Sell 2 calls with $K_2$</td>
<td>$2C_2$</td>
<td>$-2(S_T - K_2)$</td>
</tr>
<tr>
<td>Buy 1 call with $K_3$</td>
<td>$-C_3$</td>
<td>$S_T - K_1$</td>
</tr>
<tr>
<td>Total</td>
<td>$2C_2 - C_1 - C_3$</td>
<td>$S_T - K_1$, $2K_2 - S_T - K_1$, $0$</td>
</tr>
</tbody>
</table>

Table 2: Cash Flows of the Long Put Butterfly Spread

<table>
<thead>
<tr>
<th>Actions</th>
<th>Initial Cash Flows</th>
<th>Cash Flows at the Time of Expiration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$S_T \leq K_1$</td>
<td>$K_1 &lt; S_T \leq K_2$</td>
</tr>
<tr>
<td>Buy 1 put with $K_1$</td>
<td>$-P_1$</td>
<td>$K_1 - S_T$</td>
</tr>
<tr>
<td>Sell 2 puts with $K_2$</td>
<td>$2P_2$</td>
<td>$-2(K_2 - S_T)$</td>
</tr>
<tr>
<td>Buy 1 put with $K_3$</td>
<td>$-P_3$</td>
<td>$K_3 - S_T$</td>
</tr>
<tr>
<td>Total</td>
<td>$2P_2 - P_1 - P_3$</td>
<td>$K_3 + S_T - 2K_2$, $K_3 - S_T$, $0$</td>
</tr>
</tbody>
</table>

Figure 1: Long Call Butterfly Spread Payoff at Expiration

Figure 2: Long Put Butterfly Spread Payoff at Expiration

DATA AND METHODOLOGY

This paper examines whether it is possible to make riskless arbitrage profits on SET 50 Index Options using daily data downloaded from the websites of SETSMART and Bank of Thailand. The data set consists of nonzero prices, including closing prices (C), bid prices (B), and ask prices (A), time to maturity of SET50 index options (t), and Krung Thai’s savings interest rate (r) from October 29, 2012, through March 30, 2016. To trade SET50 Index Options, this paper considers transaction costs (brokerage commissions, exchange fees, interest on initial margin deposit, and bid-ask spread) as shown in Table 3.
Table 3: Details of Transaction Costs

<table>
<thead>
<tr>
<th>Types of Transaction Costs</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brokerage commissions(^a)</td>
<td>80 baht/contract</td>
</tr>
<tr>
<td>Exchange fees(^b)</td>
<td>5 baht/contract</td>
</tr>
<tr>
<td>Interest on initial margin deposit(^c)</td>
<td></td>
</tr>
<tr>
<td>- Long call butterfly spread(^d)</td>
<td>- ((\exp(rt) - 1)(K_3 - K_2)\times 200)</td>
</tr>
<tr>
<td>- Long put butterfly spread(^e)</td>
<td>- ((\exp(rt) - 1)(K_2 - K_1)\times 200)</td>
</tr>
<tr>
<td>Bid-ask spread</td>
<td>An option can be purchased at the ask price and sold at the bid price</td>
</tr>
</tbody>
</table>

\(^a\)This paper uses Capital Nomura Securities PLC's brokerage commissions, which is the same brokerage commission used in Jongadsayakul (2016). It costs individual investors 80 baht per contract to trade the 1\(^{st}\) – 25\(^{th}\) contract via market officer during our sample period. Individual investors are also subject to 7% value-added tax.

\(^b\)Exchange fees cover trading fee of 3.50 baht per contact and clearing fee of 1.50 baht per contract. These fees are constant during our sample period. Individual investors are also subject to 7% value-added tax.

\(^c\)Initial margin is required for trading SET50 Index Options. The foregone interest on cash in margin account during the holding period is an opportunity cost for the arbitrageur (Jongadsayakul, 2016).

\(^d\)Long call butterfly spread is defined as a bull call spread combined with a bear call spread. Due to no margin requirement for bull call spread, long call butterfly spread, similar to bear call spread, has an initial margin requirement equal to the difference between the long and short exercise prices multiplied by the index multiplier. The contract multipliers of the SET50 Index Options are 200 Baht per index point.

\(^e\)Long put butterfly spread is defined as a bull put spread combined with a bear put spread. Due to no margin requirement for bear put spread, long put butterfly spread, similar to bull put spread, has an initial margin requirement equal to the difference between the long and short exercise prices multiplied by the index multiplier. The contract multipliers of the SET50 Index Options are 200 Baht per index point.

There are four scenarios differing in terms of assumptions about the transaction costs. Scenario 1 ignores all transaction costs and uses closing price. Scenario 2 also uses closing price and includes brokerage commissions, exchange fees, and interest on initial margin deposit as transaction costs. Instead of using closing price, Scenario 3 uses the bid and ask prices and considers the bid-ask spread as the only transaction cost of trading. The bid-ask spread, along with brokerage commissions, exchange fees, and interest on initial margin deposit, represents transaction costs in Scenario 4. Define TC as transaction costs other than those arising from the bid-ask spread. This means TC includes brokerage commissions (BC), exchange fees (EF), and interest on initial margin deposit (IM) and can be calculated as follows:

\[
TC = \text{number of contracts} \times (BC + EF) \times (1 + \text{value-added tax}) + \text{Interest on IM}
\]

\[
TC_{CB} = 4(80 + 5)(1 + 0.07) + (\exp(rt) - 1)(K_3 - K_2)\times 200 = 363.8 + (\exp(rt) - 1)(K_3 - K_2)\times 200
\]

\[
TC_{PB} = 4(80 + 5)(1 + 0.07) + (\exp(rt) - 1)(K_2 - K_1)\times 200 = 363.8 + (\exp(rt) - 1)(K_2 - K_1)\times 200
\]

Table 4 shows the arbitrage convexity conditions under four scenarios. The arbitrage profit comes from the positive initial cash flows when pursuing the appropriate strategies.

Table 4: Conditions for the Arbitrage Opportunities

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Long Call Butterfly Spread</th>
<th>Long Put Butterfly Spread</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>((C_1^{CL} + C_3^{CL} - 2C_2^{CL})\times 200 &lt; 0)</td>
<td>((P_1^{CL} + P_3^{CL} - 2P_2^{CL})\times 200 &lt; 0)</td>
</tr>
<tr>
<td>2</td>
<td>((C_1^{CL} + C_3^{CL} - 2C_2^{CL})\times 200 + 363.8 + (\exp(rt) - 1)(K_3 - K_2)\times 200 &lt; 0)</td>
<td>((P_1^{CL} + P_3^{CL} - 2P_2^{CL})\times 200 + 363.8 + (\exp(rt) - 1)(K_3 - K_2)\times 200 &lt; 0)</td>
</tr>
<tr>
<td>3</td>
<td>((C_1^{AL} + C_3^{AL} - 2C_2^{BL})\times 200 &lt; 0)</td>
<td>((P_1^{AL} + P_3^{AL} - 2P_2^{BL})\times 200 &lt; 0)</td>
</tr>
<tr>
<td>4</td>
<td>((C_1^{AL} + C_3^{AL} - 2C_2^{BL})\times 200 + 363.8 + (\exp(rt) - 1)(K_3 - K_2)\times 200 &lt; 0)</td>
<td>((P_1^{AL} + P_3^{AL} - 2P_2^{BL})\times 200 + 363.8 + (\exp(rt) - 1)(K_3 - K_2)\times 200 &lt; 0)</td>
</tr>
</tbody>
</table>
EMPIRICAL RESULTS

Table 5 presents call and put butterfly spread test results for SET50 Index Options during the sample period from October 29, 2012 to March 30, 2016. When there are no transaction costs (Scenario 1), the frequency of arbitrage opportunities for call (put) butterfly spread is 9.6% (10.02%) over the whole sample. However, even with modest transaction costs (Scenario 2), including brokerage commissions, exchange fees, and interest on initial margin deposit, the frequency of arbitrage opportunities drops to 5.03% for both call and put butterfly spreads. There is no arbitrage opportunity for call butterfly spread at all when taking bid-ask spread into account (Scenario 3 and 4). The existence of arbitrage opportunities for put butterfly spread decreases further to 0.04% in Scenario 3 and literally disappears in Scenario 4.

In contrast to the frequency of arbitrage opportunities, the size of the arbitrage profits does not show any improvement. The average arbitrage profit from the long call (put) butterfly spread position is 707.46 (723.47) baht under Scenario 1 where none of market frictions are taken into account. The average arbitrage profit from the long call (put) butterfly spread position increases to 841.51 (922.42) baht under Scenario 2 after taking brokerage commissions, exchange fees, and interest on initial margin deposit into account. According to Scenario 3, an arbitrageur could expect to earn 100 baht only from a long put butterfly spread position after considering the bid-ask spread. Taking into account all the market frictions, there is no arbitrage profit.

Taking together, the maximum number of arbitrage opportunities is observed under the no transaction costs case (Scenario 1). It is also much more common to pursue the long put butterfly spread than the long call butterfly spread. With the existence of arbitrage opportunities, the long put butterfly spread position generates more arbitrage profit than the long call butterfly spread position. When the bid-ask spread, along with brokerage commissions, exchange fees, and interest on initial margin deposit, represents transaction costs, it is not possible to earn arbitrage profits from call and put butterfly spreads.

Table 5: Arbitrage Opportunities of Call and Put Butterfly Spreads over the Whole Sample

<table>
<thead>
<tr>
<th>Scenario</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Call</td>
<td>Put</td>
<td>Call</td>
<td>Put</td>
</tr>
<tr>
<td>Number of Observations</td>
<td>5,863</td>
<td>5,581</td>
<td>5,863</td>
<td>5,581</td>
</tr>
<tr>
<td>Number of Arbitrage Opportunities</td>
<td>563</td>
<td>559</td>
<td>295</td>
<td>281</td>
</tr>
<tr>
<td>Percentages of Arbitrage Opportunities</td>
<td>9.60</td>
<td>10.02</td>
<td>5.03</td>
<td>5.03</td>
</tr>
<tr>
<td>Arbitrage Profits (Baht)</td>
<td>707.46</td>
<td>723.47</td>
<td>841.51</td>
<td>922.42</td>
</tr>
</tbody>
</table>

CONCLUSION

This paper investigates the existence of arbitrage opportunities for call and put convexities, also referred to as butterfly spreads, in the SET50 Index Options market. The sample covers the period from October 29, 2012, through March 30, 2016. The results show that the frequency of arbitrage opportunities is about 10% under the no transaction costs case (Scenario 1). The frequency of arbitrage opportunities decreases to 5.03% after taking brokerage commissions, exchange fees, and interest on initial margin deposit into account (Scenario 2). Moreover, when using the bid-ask prices rather than closing prices (Scenario 3), there is no arbitrage opportunity for call butterfly spread. The arbitrageurs can earn riskless profits when employing long put butterfly spread, but their opportunities drop to 0.04 percent. Taking all transaction costs (brokerage commissions, exchange fees, interest on initial margin deposit, and bid-ask spread) into account (Scenario 4), none of arbitrage opportunities exists in the SET 50 Index Options market. With the existence of arbitrage opportunities, the long put butterfly spread position generates more arbitrage profit than the long call butterfly spread position.

To detect arbitrage opportunities, this paper uses the historical prices. However, future research should consider the intraday bid-ask prices in real time to examine the existence of arbitrage opportunities in the SET50 Index Options market.
ACKNOWLEDGEMENT

The author acknowledges financial support from Department of Economics, Kasetsart University.

REFERENCES


Megatrends In American Higher Education: A Management Scorecard For Strategic Planning

Jeffrey W. Focht, Ed.D., DeSales University, USA
David M. Gilfoil, Ph.D., DeSales University, USA
Eric Hagan, Ed.D., DeSales University, USA

ABSTRACT

Colleges and universities have entered the most volatile time in history. The convergence of issues regarding affordability, competition, technology, alternate educational pathways, demographic shifts, compliance, and talent management, all contribute to a complex and confusing future for higher education. Business literature often refers to such disruption as a Strategic Inflection Point – a state of maturity – that either ignites innovation in organizations or triggers decline and failure for those resisting change. The researchers review research-based megatrends impacting higher education sectors. A related Higher Education Index of Sustainability Trends (HEIST) model, a volatility scorecard comparing institutional performance related to each trend, is proffered to institutional leaders for strategic planning purposes.
Author requested nothing in proceedings.
Surprising Insights From The iStar International Study Of Astronomy Education Research Database

Stephanie J. Slater, CAPER Center for Astronomy & Physics Education Research, USA
Timothy F. Slater, CAPER Center for Astronomy & Physics Education Research, USA
Paulo S. Bretones, CAPER Center for Astronomy & Physics Education Research, USA
Coty B. Tatge, CAPER Center for Astronomy & Physics Education Research, USA
Sharon P. Schleigh, CAPER Center for Astronomy & Physics Education Research, USA

ABSTRACT

For much of the history of academia, a synthesis-oriented literature review is a longstanding component of any science education research program. Few scholars would argue against any suggestion that discipline-based astronomy education research studies should not be carefully lodged within the existing scholarly landscape in order to establish relevance and theoretical underpinnings. Yet, some well-meaning journal reviewers have proposed all references and citations should focus first on recent papers published only within the last few years. Such a constraint is often welcomed by nascent researchers, as it dramatically limits the scope of literature that must be surveyed. At the same time, some reviewers admonish writers to focus only on peer-reviewed journal articles at the expense of looking at unpublished dissertations. Through the iSTAR international Study of Astronomy education Research Database project at istardatabase.org, we have found hundreds of rarely cited astronomy education research studies from the last 100-years, which yield results largely unpublished in journals providing insight into ongoing science education efforts.
First Results From Administering The Exam Of GeoloGy Standards EGGS

Sarah Katie Guffey, University of Wyoming, USA
Timothy F. Slater, University of Wyoming, USA
Stephanie J. Slater, CAPER Center for Astronomy & Physics Education Research, USA
Sharon Price Schleigh, East Carolina University, USA

ABSTRACT

In the past few decades, several discipline-based geoscience education research teams have attempted to create a nationally validated, conceptual diagnostic survey that college faculty could easily use to measure the impact of competing teaching methods. To date, these efforts have rarely achieved considerable success or widespread adoption. Taking a new approach to creating a criterion-referenced, easy-to-administer and –score conceptual diagnostic survey for undergraduates taking introductory geology survey courses, we are continuing to rigorously and systematically work to firmly establish the reliability and validity of the recently released Exam of GeoloGy Standards, EGGS. In educational testing, reliability refers to the consistency or stability of test scores whereas validity refers to the accuracy of the inferences or interpretations one makes from test scores. There are several types of reliability measures being applied to the iterative refinement of the EGGS survey, including test-retest, alternate form, split-half, internal consistency, and interrater reliability measures. EGGS rates strongly on most measures of reliability. For one, Cronbach’s alpha provides a quantitative index indicating the extent to which if students are answering items consistently throughout the test and measures inter-item correlations. Traditional item analysis methods further establish the degree to which a particular item is reliably assessing students is actually quantifiable, including item difficulty and item discrimination.
Author requested nothing in proceedings.
The Impact Of Economic Growth And Development On The Environment Of A Gaming Destination
Luis Cunha, Macau Polytechnic Institute, China

ABSTRACT

The impact of economic growth and development on pollution is a quite popular academic topic, however only few recent studies focused on Macau gaming industry. Precious studies showed that, with the right government intervention, development can be a factor influencing reducing pollution. Over the last 15 years, after the handover to China, Macau have seen an unprecedented economic growth and development. This article studies the impact of Macau strategic development model focused on the gaming industry on some environment data (water, land, air quality).

Using correlation statistical analysis it was conclude that there is a high significant relationship between growth and water usage. For solid waste, three of the four indicators showed highly significant relationship. As for the air quality, only the roadside monitoring station showed relevant relationship with economic growth and development. Based on the findings some advice was given on how to shift the growing pollution curve.

Keywords: Economic Growth, Economic Development, Pollution, Gaming Industry

INTRODUCTION

It is generally accepted and worldwide discussed that pollution is one of the many environmental challenges facing the world today. Economic development is seen as a factor that changes attitude towards pollution. There is broad consensus that, high living standards and high environmental quality are mutually consistent and interdependent in the long-term, as it contributes to better public health. However, in the short to medium-term, increases on economic activity is seen conflicting with environment, environment concerns and economic growth seem to play in conflicting stands (EC, n.d.).

In developing countries, pollution is great concern on health issues, being referred as the cause of death and disabilities of millions of people annually. Developed countries have applied resources and technologies to reduce pollution and get gains in health risks and the potential impact of climate change (Omoju, 2014).

One landmark study on this issue was the environmental Kuznets curve (EKC), named after Simon Kuznets (1955). He hypothesized the relationship between various indicators of environmental degradation and income per capita. In the early stages of economic growth, degradation and pollution increase, but beyond some level of income per capita (which will vary for different indicators), the trend reverses, so for high-income levels, economic growth leads to environmental improvement (Galbraith, 2007). The EKC became a quite popular discussion topic in the early 1990s.

Therefore, governmental authorities of countries over a certain level of development should take the right actions and regulation implementations in order to decrease the pollution curve.

Over the last 15 years, after the handover to China, Macau saw unprecedented economic growth. Its economic development strategy was supported on the vision of a new re-dimensioned gaming and tourism industry, mainly steamed by five stars integrated hotel casino resorts. This model led Macau to an unprecedented economic and development achievements and to be ranked first in terms of travel and tourism direct contribution to the GDP (43.9%),
direct contribution to employment (47.9%) and visitors export share (89.7%) (WTTC, 2015).

In 2010, Macau started to set up an environment protection framework, in compliance with mainland China’s Kyoto Protocol commitments and integrated on the Pearl River Delta regional. Part of this framework, is a sustainability charter, stating a responsibility on the environmental performance of the tourism industry (GCS, 2011).

Modern Public Administration require government strategy makers to set their strategies upon pros and cons impacts on their public policies choices. Regarding to the casino industry, it’s important to make clear to government decision makers, casino managers, and academic researchers the extent of both the positive and negative impacts of casino developments in order to minimize potential negative impacts (Wan, Li, & Kong, 2011).

Therefore, this study aims to analyses the evolution of several environment statistical data and compare them with the economic and development growth brought by the explosion of the casinos. This study wants to conclude on the stage of pollution curve and whether there is a linear relationship between available economic development data and studied environment data.

LITERATURE REVIEW

In 1955 Kuznets proposed the environmental Kuznets curve (EKC), which implies that there is a relationship between various indicators of environmental degradation and income per capita. In the early stages of economic growth degradation and pollution increase, but beyond some level of income per capita (which will vary for different indicators) the trend reverses, so that at high-income levels economic growth leads to environmental improvement. This suggests that the environmental impact indicator is an inverted U-shaped function of income per capita. Typically the logarithm of the indicator is modeled as a quadratic function of the logarithm of income.

The EKC became more popular in the early 1990s, by the World Bank’s World Development Report 1992 (World Bank, 1992). This report explores the links between economic development and the environment on an intent to integrate environmental considerations into development policymaking. The report argues that continued, and even accelerated, economic and human development is sustainable and can be consistent with improving environmental conditions, but that will require a major policy, program, and institutional shifts. Also argues that economic activity growth leads to a negative impact on the environment, is based on the consideration that technology, tastes and environmental investments are static. However as incomes get higher, increases the demand for improvements in environmental quality and investment (World Bank, 1992).

However, the EKC has never been shown to apply to all pollutants or environmental impacts and recent evidence challenges the notion of the EKC in general (Dasgupta, Laplante, Wang, & Wheeler, 2002; Perman & Stern, 2003).

Although issues relating to the impacts of casino gambling have been extensively examined in the context of Western countries (Garrett, 2004; Giacopassi, Nichols, & Stitt, 1999; Janes & Collison, 2004; Kang, Lee, Yoon, & Long, 2008), few studies were done in Asia.

Studies concerning the residents perceptions about casinos and gambling has been made several times in the past and it is a mixture of thoughts and feelings. Also sustainable development is a well-researched subject (Vong, 2004).

After the 1980s with the deregulated the gaming industry in several countries, Casinos jumped to the fast track of expansion. Just in 10 years, from 1990 till 2000 casino revenues went up with over 200% (Grinols & Mustard, 2006). Where before there were three major gaming destinations (Las Vegas, Monte Carlo and Macau), all across the world new ones added, from North America, South East Asia, Eastern Europe and to Australia. Just in Asia-Pacific region, there had been built new casinos in Australia, New Zealand, South Korea, Cambodia, Myanmar, Philippines, Macau, and Singapore (Hsu, 2006).

More recently Gaming industry had become a more contributor for the tourism industries. (Wan Y., 2012)
The contemporary gaming industry concept don’t operate as an isolated facilities anymore, they are rather a big facility integrating, gaming industry with resorts, shopping, and entertainment industries. These is the concept called by some as “casinopolitanism” that can be seen in Las Vegas and Macau. (Luke, 2011)

Thus, it is important to carefully examine the impacts and influences of casino gambling. After reviewing the related literature that discusses the influences of legalized casino gambling, most researchers have focused on the social, economic, and environmental spheres of influence and have explored people's pro-and-con opinions toward casino gambling (Lee & Back, 2006; Hsu, 2006; Wan Y., 2012), but only few focused on Macau.

Economic Impacts

The economic benefits of casinos for communities around the world have been a prolific topic for the last 20 years. The main positive economic impacts when developing tourism and the opening casino establishments are: can be on, production (GDP) (Kang, Lee, Yoon, & Long, 2008), increase of tax revenues in particular the gaming tax (Anderson, 2005), creation of new jobs in the gaming industry (Chhabra, 2007), new jobs in restaurants, bars, pubs, and retail outlets. (Buultjens, 2006), increase of consumption (Kang, Lee, Yoon, & Long, 2008), increase public services (Anderson, 2005), among other benefits.

Due to this benefits, nearly all studies state that this is why the majority of destinations start to develop gaming facilities. (Grinols & Mustard, 2006; Kwan & McCartney, 2005; Vong, 2004)

Another contribution of Gaming industry is that brings to the tourism destination a new product and services able to satisfy the needs and desires of locals and tourists from different market segments and with diverse lifestyles. (Hung, Lin, Yang, & Lu, 2012)

In a study of Macau casino development carried out by Kwan and MacCartney (2005) concluded the impact of Macao economic development from tax revenues on casino revenues bringing to Macau people better infrastructures, culture and arts, generous social subsidies, health services, and education.

Macau tourism had contributed not only economic growth but also to economic development, as the Human Development Index had an increase during this period, mainly due to the increase of the income and gains of the life expectancy (DSEC, 2015). Moreover, these economic development improvement, had also an impact on the income distribution. The gaming industry workforce was not the main beneficiary of the economic development, as a matter of fact, other industries, such as the public administration and education had a higher increase in their salaries than the gaming industry itself (DSEC, 2015).

Environmental Impacts

In terms of definition, pollution is the process of making dirty and unsafe or unsuitable to use parts of the environment, namely the water, air and land. This process can be taken through man actions of introduction of tangible (i.e. liquid and solid waste) or intangible (i.e. as light, sound and temperature) contaminants into a natural environment. (Bradford, 2015)

The World Health Organization (WHO) reveals a quite scary list of facts related with pollution. Pollution is considered one of the biggest global threats and toxic pollution is affecting over 200 million people worldwide, with tens of thousands poisoned each year. In 2012 alone, 56 million people died worldwide, nine million died due to pollution causes, which 8.7 million deaths occurred in low- and middle-income countries. In other words, pollution killed one in seven people and mainly in poor countries. The WHO statistics shows that in 2012, pollution killed two-thirds more people than malaria (625,000 deaths), HIV/AIDS (1.5 million deaths), and tuberculosis (930,000 deaths) combined. (WHO, 2013)

Estimates indicate that the proportion of the global burden of disease associated with environmental pollution hazards ranges from 23 percent to 30 percent. These estimates include infectious diseases related to drinking water, sanitation,
and food hygiene; respiratory diseases related to severe indoor air pollution from biomass burning; and vector borne diseases with a major environmental component, such as malaria. These three types of diseases each contribute approximately 6 percent to the updated estimate of the global burden of disease (WHO, 2006).

According to the World Bank and the Global Alliance on Health and Pollution, pollution can be responsible of diseases like lung, throat and thyroid cancers (and lowering life expectancy to 45 years in world’s worst polluted places). Also can be responsible for neurological damage and a range of diseases that might incapacitate a person or result in irreversible damage. In 2012 alone, it is estimated that 9 million people died from air, water and land pollution (WHO, 2014; Chatham-Stephens, et al., 2013).

Supported on the pollution definition, the literature review was focused on the water usage, solid waste and air quality.

**Water Usage**

Water resource is one of the basic natural resources that maintain the life supporting systems on Earth. Due to its geography and size, Macau SAR is highly dependable of water from Mainland China. China itself is a country whose water resources are relatively insufficient. Water resource shortage is an important factor limiting China social economic development. Due to its social demographics characteristics and social-economic development, China is using extremely limited water resources at an unprecedented rate and in a large scale (Wang, Cui, & Li, 2012).

Therefore, as water is a vital resource for Macau, it needs to be well managed to ensure people have access to affordable and safe drinking water and sanitation and that industry needs are met, without depleting water resources or damaging ecosystems.

**Air Pollution**

There are main concerns relate to the effects of air pollution on human health, ecosystems, and buildings, and to their economic and social consequences. Human exposure is particularly high in urban areas where economic activities and road traffic are concentrated. Causes of growing concern are concentrations of fine particulates, NO2, toxic air pollutants, and acute ground-level ozone pollution episodes in both urban and rural areas.

According to the 2016 WHO report, more than 80% of people living in urban areas that monitor air pollution are exposed to air quality levels that exceed the WHO limits. This affects in particular 98% of cities in low- and middle income countries with more than 100 000 inhabitants. In contrast, in high-income countries, that percentage decreases to 56%. (WHO, 2016)

The same was supported by a conjoint study carried out by the World Bank and the Institute for Health Metrics and Evaluation (IHME), estimated that in 2013 that worldwide, 1 in 10 deaths were caused by diseases attributed to indoor and outdoor air pollution, and surrogated that air pollution has become the fourth risk factor for premature deaths, just behind tobacco smoking. (Washington University, 2016)

The same study estimated that 5.5 million lives were lost in 2014 to diseases associated with outdoor and household air pollution, causing human suffering and reducing economic development. Seeking to give reasons for action, they estimate that premature deaths related to air pollution cost the global economy about US$225 billion in lost labor income in 2013 and more than US$5 trillion in welfare losses, pointing toward the economic burden of air pollution. (Washington University, 2016)

**Solid Waste**

Solid waste is one of the main components of pollution and requires concurrent strategies for ensuring a sustainable environment. A sustainable environment in this context involves mitigation of pollution, impacts, climate change, and depletion of natural resources.
The process of ‘waste management’ (the generation of waste and the collection, processing, transport and disposal of waste), is important for both the health of the public and environmental reasons. Waste is anything discarded by an individual, household or organization. As a result waste is a complex mixture of different substances, only some of which are intrinsically hazardous to health. (Aljaradin & Persson, 2012)

Waste management can be characterized on the basis of aspects ranging from practices, strategies, goals, control, monitoring and regulation of the production, financial and marketing aspects, to environmental assessments of various treatments, evaluation and policy. These aspects can be used in a holistic approach to mitigating challenges emanating from waste, its management and various treatments. Main concerns relate to the potential impact from inappropriate waste management on human health and on ecosystems (soil and water contamination, air quality, land use and landscape). (Marshall & Farahbakhsh, 2013)

Regarding environment impacts of casino destinations, previous studies are divided. Some argue that casino businesses produce several positive environmental outcomes and help to protection of natural environments and ecological resources, the conservation of historical buildings and cultural heritage, the improvement of public transportation, upgrades in electrical facilities, higher medical standards, revitalization of city landscapes, and increases in recreational playgrounds (Lee & Back, 2006). Other studies, in contrast, argue that casino gambling are followed by traffic jams, parking difficulty, escalation of trash, soil erosion, poor air quality, decline of scenic beauty, demolition of public infrastructure, and large tourist gatherings (Harrill & Potts, 2003; Ko & Stewart, 2002; Yoon, Gursoy, & Chen, 2001).

Regarding the negative environmental impacts of casino gambling, the following aspects are usually mentioned by researchers: traffic jams, parking difficulty, escalation of trash, soil erosion, poor air quality, decline of scenic beauty, demolition of public infrastructure, and large tourist gatherings (Harrill & Potts, 2003; Ko & Stewart, 2002; Snaith & Haley, 1999; Yoon, Gursoy, & Chen, 2001).

Stokowski (1996) noted that Colorado State Highway 119 exhibited many serious traffic jams within the first month after the opening of a casino in Colorado. Such environmental problems, particularly those caused by a lack of holistic considerations, are the price that the locals have to pay in order for a casino to be opened.

Not many studies were done about the casino and gaming tourism in the Macau environment and most of them were focused on perceptions of residents. From the perspectives of the local residents of Macau regarding the association between the negative environmental impacts of and attitudes toward casinos, acknowledged that the residents of Macau attributed the following negative environmental impacts to the development of local casinos: worsening traffic congestion, air pollution, and overcrowding (Vong, 2009).

Undoubtedly, after facing such negative environmental impacts, Macau residents developed more conservative attitudes toward gambling. Some studies have found that the perceptional strength of local residents toward negative environmental impacts is practically reduced (Wu & Chen, 2015).

**Macau Economic Profile**

After 450 years of Portuguese administration, Macau SAR, had become a Special Administrative Region of China in 1999. The new Chinese administration, defined its economic development strategy in the tourism and gaming industry, supported by the opening of its borders to Chinese citizens and liberalization of the gaming industry in 2001. The deregulation of the gaming industry lead to the end of the existing monopoly since the 1930’s and open the away three new gaming licenses. This started a massive development all over Macau. (GIAB, 2016)

As the new orientation took place, huge amount of capital flowed to Macau to take part on this massive venture. Part of this plan was the conception was Stip similar to the Las Vegas Strip called Cotai Strip with several mega resort integrated casino projects operating and hiring thousands of staff (Vong, 2004; Kwan & McCartney, 2005). Considering only the investments in the Cotai (not the other taken place in Macau peninsula), when finished by 2017 will accommodate in total 13 resorts with 21 international brands hotels and over 23000 rooms (SCMP, 2016).
Presently Macau SAR, is characterized by a small territory of just 30.4km² land area, standing just next to the Chinese city of Zhuhai. In 2015 had 646,8 thousand inhabitants and with a population density 21.1 per km², (Macau Government, 2016) which makes it the most dense populated city in the world. (CIA, 2015)

Another important figure is the number of non-resident workers. In the end of 2015 Macau employed 181646 of non-resident employees, 28% of its population, mainly from mainland China. (Macau Government, 2016)

**Macau Recent Economic Profile**

According to the local statistic department DSEC, from 2002 till 2014 the number of visitors and one day visitor increased 173% and 242% respectively. Indeed, Macau in 2014, received 31.5 million tourists. This number of tourists represented 49.5 times the size of its own population. In 2015 visitors decrease to 30714.6. (Macau Government, 2016)

In terms of national aggregates, for the same period (from 2002 to 2012) the GDPpc grew 205% and the GNIpc grew 162%. (DSEC, 2015)

According to the World Tourism and Travel Council (WTTC), in 2015 Macau was the first of the world ranking in terms of travel and tourism direct contribution to the GDP (43.9%), direct contribution to employment (47.9%), visitors export share (89.7%). Also ranked second in terms of travel and tourism total contribution to GDP (87.6%), and third position on the travel and tourism total contribution to employment (85.7%), and travel and tourism investment to total investment (38.7%). (WTTC, 2015)

According to the Macau statistical department, this tourism explosion, contributed in 2013 to reach an unprecedented GDP growth of 19.8%, GNI of growth of 18.6%, GNIpc growth of 11.9% and significant constant gains in terms of Human Development Index (HDI) reaching 0.892 due mainly to the increase of the income index. With new Mainland China measure to control the capital flow and corruption, contributed to a considerable slowdown in Macau economy. Those measures contributed in 2014 to a slowdown on the GDP growth (7.7%), GNI growth (7.1%) and GNIpc growth (2.4%). However, HDI still noted a small increase to 0.894 in 2014, this time due to progress in the life expectancy index (DSEC, 2015).

**Macau Environment Facts**

Macau is also characterized as a high density of vehicles. With 249.339 licensed vehicles (motorbikes and automobiles) using 427 km length public roads. It has an average of 185 automobiles per 1000 habitants.

However, as Macau is highly dependent on water and highly affected by air quality of Mainland China, indirectly this economic growth and development is affecting Macau population. (DSEC, 2015)

It’s generally accepted that electricity production has impacts on the water, air quality and land. (Pace University, 2000) In terms of energy, Macau is 81.6% dependent on Mainland China (CEM, 2015).

**Macau Environment Public Policies**

In 2010, after carrying out a public consultation and public opinion period, the Macau Environmental Protection Department (DSPA), did a set studies framed by a master and specific planning of environmental protection on atmosphere, water, ecology, noise, light, waste, radiation and environmental management, etc.

These consultations and studies, culminated on the "Elaboration of the Text of Environmental Protection Planning of Macao" and the publication of "Environmental Protection Planning of Macao (2010-2020)".

“The plan identified 7 existing environment problems and challenges.
1. Transportation, energy consumption and regional air pollution have been increasing.
2. Ensure the security of potable water and operation of wastewater treatment system; quality of water environment is to be remediated comprehensively.
3. Strengthening the reduction and resourcing of solid wastes.
4. Increased pressure in ecological environment, urging for the improvement in preservation of ecological environment.
5. With the ambient noise pollution worsening, it is necessary to reduce the level of traffic noise pollution and strengthen management of the community noise.
6. Strengthening the management and supervision of the environmental radiation is needed.
7. More attention should be paid on the light pollution problem.” (DSPA, n.d.)

In the 2011 yearbook, Macau government defines as first requirement to build a world travel and leisure hub, in compliance with mainland China’s Kyoto Protocol commitments, its commitment to continuously improve the environment, by creating a low carbon, convenient, comfortable and quality living space. To do so, the Macau government actively implemented a set of initiatives including emission reduction facilities, research and development and applications of renewable energy, promotion of eco-friendly consumption, and improvements to environmental protection infrastructure (GCS, 2011).

On the same token, Macao Government Tourist Office (MGTO), with the support of Pacific Asia Travel Association (PATA), issued Macao’s strategic blueprint and Five-Year sustainability plans (2011-2015) to ensure a sustainable approach to the tourism industry. This plan proposed, for the first time, a sustainability charter, stating that the tourism industry should be responsible for its environmental performance. It called for a guidebook for sustainable tourism practices such as: sustainable design and construction; green procurement; reduction of waste, water usage and energy; and an active contribution towards local environmental initiatives such as vegetation planting and waste-recycling. As the industry backbone of the territory, casino properties, aware of their impact on the environment, are taking measure on reducing their annual electricity consumption and carbon emissions continuously for a few years (Chua, 2015).

**METHODOLOGY**

This study is a quantitative study that aims to compare the evolution of Macau pollution and compare with economic performance indicators. Pollution indicators were selected according the definitions of pollution for water usage, solid waste and air quality. The Macau statistic department provided the data for relevant variables. Economic growth and development variables data, were downloaded from the World Bank data base.

For this purpose were selected as Economic Growth and Economic Development indicators:

- Growth domestic Product (GDP) expense optic, current prices, million US$
- Growth domestic Product per capita (GDP pc), current prices US$
- Growth National Income per capita (GNI pc), Atlas method, current million US$

For the Pollution indicators were selected:

- For the Water - Two indicator were chosen: Waste water treated per day (m3/day); Average consumption of water ('000m3/day). From the available indicators, these seems to be the most relevant ones regarding the usage of this important resource.
- For the Land: Construction waste ('000m3); Untreated waste transported directly to landfill (Ton); By-products produced from incineration (Ton). These indicators seems to be the most relevant available ones addressing the land occupation with waste.
- For the air quality: were selected the data of four air quality monitoring stations around the Macau peninsula and Taipa island: Roadside; High Density Residential in Macau, High Density Residential in Taipa; Natural Park in Taipa. These monitoring stations are recording the air quality around the city since before 2002. The locations are urban locations and residential locations.

The time period of analysis was the period after the liberalization of the gaming sector, from 2002 till 2014 and 2015 (depending on the available data).
As methodology technic, was executed a hypothesis test to conclude if there is a linear relationship between two samples. Pearson’s r correlation analysis seems to be an appropriate statistical method as a bivariate analysis can measures the strengths of association between two variables, the degree of the relationship between linear related variables and if this relationship is statistically significant. In statistics, the value of the correlation coefficient varies between a positive correlation (+r), a negative correlation (-r), or no correlation (r=0). (Bobko, 2001)

Supported by the literature review, all the hypothesis design examined if the statistical model have a positive linear relationship between variables. In order to conclude if there is sufficient evidence at a α level of the linear relationship between the two variables, the P-value was checked if it is smaller than level α we reject the null hypothesis. (Chen, 2002)

As tools were used the Microsoft Excel to organize the data and the SPSS statistics 20 to perform the correlation.

**Hypothesis Testing:**

Economic growth is conventionally measured as the percentage increase the gross domestic product (GDP) or gross national product (GNP) for one year. GDP is an estimate of the amount of transfer to the market, the sum of the final value of all goods and services that are produced and marketed in cash within a certain period of time. Growth in the production of goods and services is a basic determinant of how the economy fares. (World Bank, 2002)

Economic development derived from the traditional economics rank the economies in terms of growth of aggregate output and the national product. Instead, it proposed a more human base measurement of the economy, concerned more on people’s achievements, their corresponding capabilities, as well as other topics such as poverty, morbidity, nourishment, literacy and education. (Smith & Todaro, 2011)

GDP per capita (GDP pc) measures the economy activity and the GDPpc growth shows the productivity of an economy. Productivity is commonly defined as a ratio between the volume of output and the volume of inputs. In other words, it measures how efficiently production inputs, such as labor and capital, are being used in an economy to produce a given level of output. Productivity is considered a key source of economic growth and competitiveness. (OCDE, 2015)

The UN Sustainable Development Department considers that, since GDPpc shows the extent to which the total production of a county can be shared by its population, its growth reflects the pace of income growth per head of the population. Therefore, it can work as a composite indicator of economic development. It does not directly measure sustainable development but it is a very important measure for the economic and developmental aspects of sustainable development. (UN, n.d.)

According to the glossary of the World Bank, economic development is the transformation and qualitative restructuring in the economy of a country associated with technological and social progress. The main economic development indicator is the increase in GDPpc, reflecting an increase in average economic productivity and material welfare of the population of a country. (World Bank, 2002)

Furthermore, although the national income seems to be a very convenient indicator as a simple aggregate indicator, it does not reveal the true development problems. (Seers, 1972)

Although it’s commonly accepted that GNIpc does not completely summarize a country’s level of development or measure welfare, it has proved to be a useful and easily available indicator that is closely correlated with other, nonmonetary measures of the quality of life, such as life expectancy at birth, mortality rates of children, and enrollment rates in school. (World Bank, 2002)

Travel and Tourism’s can have an enormous impact on a country economic and social development; it can influence the economy by increasing business, trade and capital investment, can generate jobs and entrepreneurship, as well as protect heritage and cultural values. This impact is studied by the WTTC in a direct manner, as well as in a number of significant indirect and induced impacts in the economy. (WTTC, 2015)
The public policy economic strategy helped Macau to archive the largest tourism growth rate in the world.

**Hypothesis 1:** There is a statistically significant positive relationship between Macau economic performance and water usage.

See Table 1 For economic growth H11 and H12.

For economic development H21, H22 and H31, H32

**Hypothesis 2:** There is a statistically significant positive relationship between Macau economic performance and waste.

See Table 1 : For economic growth H13, H14, H15 and H16.

For economic development H23, H24, H25, H26 and H33, H34, H35, H36.

**Hypothesis 3:** There is a statistically significant positive relationship between Macau economic performance and air quality.

See Table 1 : For economic growth H17, H18, H19, and H110.

For economic development H27, H28, H29, H210 and H37, H38, H39, H310.

### Table 1: Hypothesis Identification

<table>
<thead>
<tr>
<th></th>
<th>Water usage</th>
<th>Waste</th>
<th>Air quality (Monitoring Stations)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Waste water treated per day (m$^3$/day)</td>
<td>Average consumption water ('000m$^3$/day)</td>
<td>Solid waste incinerated (Ton)</td>
</tr>
<tr>
<td>Economic growth GDP US$</td>
<td>H11</td>
<td>H12</td>
<td>H13</td>
</tr>
<tr>
<td>Economic development GDP per capita</td>
<td>H21</td>
<td>H22</td>
<td>H23</td>
</tr>
<tr>
<td>GNI per capita</td>
<td>H31</td>
<td>H32</td>
<td>H33</td>
</tr>
<tr>
<td>Year</td>
<td>Waste water treated per day (m³/day)</td>
<td>Average consumption of water ('000m³/day)</td>
<td>Solid waste incinerated (Ton)</td>
</tr>
<tr>
<td>------</td>
<td>-------------------------------------</td>
<td>------------------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>2002</td>
<td>146,030</td>
<td>150</td>
<td>243,151</td>
</tr>
<tr>
<td>2003</td>
<td>133,622</td>
<td>153</td>
<td>248,842</td>
</tr>
<tr>
<td>2004</td>
<td>151,039</td>
<td>162</td>
<td>256,224</td>
</tr>
<tr>
<td>2005</td>
<td>152,533</td>
<td>162</td>
<td>278,913</td>
</tr>
<tr>
<td>2006</td>
<td>151,944</td>
<td>185</td>
<td>286,358</td>
</tr>
<tr>
<td>2007</td>
<td>167,736</td>
<td>206</td>
<td>288,243</td>
</tr>
<tr>
<td>2008</td>
<td>124,340</td>
<td>213</td>
<td>298,491</td>
</tr>
<tr>
<td>2009</td>
<td>182,733</td>
<td>214</td>
<td>324,808</td>
</tr>
<tr>
<td>2010</td>
<td>187,874</td>
<td>210</td>
<td>321,409</td>
</tr>
<tr>
<td>2011</td>
<td>185,662</td>
<td>213</td>
<td>329,154</td>
</tr>
<tr>
<td>2012</td>
<td>203,245</td>
<td>206</td>
<td>365,648</td>
</tr>
<tr>
<td>2013</td>
<td>214,940</td>
<td>215</td>
<td>396,691</td>
</tr>
<tr>
<td>2014</td>
<td>216,917</td>
<td>229</td>
<td>457,370</td>
</tr>
<tr>
<td>2015</td>
<td>192,965</td>
<td>233</td>
<td>509,111</td>
</tr>
</tbody>
</table>

Source of data: Statistics and Census Service
Table 3: Economic performance data

<table>
<thead>
<tr>
<th>Year</th>
<th>GDP (current million US$)</th>
<th>GDP growth (annual %)</th>
<th>GDP per capita (current US$)</th>
<th>GDP per capita growth (annual %)</th>
<th>GNI per capita, Atlas method (current US$)</th>
<th>GNI per capita, growth (annual %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>7,323</td>
<td>9</td>
<td>16,486</td>
<td>7</td>
<td>16,600</td>
<td>7</td>
</tr>
<tr>
<td>2003</td>
<td>8,195</td>
<td>12</td>
<td>18,181</td>
<td>10</td>
<td>18,240</td>
<td>10</td>
</tr>
<tr>
<td>2004</td>
<td>10,586</td>
<td>27</td>
<td>23,083</td>
<td>25</td>
<td>22,880</td>
<td>25</td>
</tr>
<tr>
<td>2005</td>
<td>12,092</td>
<td>8</td>
<td>25,830</td>
<td>6</td>
<td>24,760</td>
<td>8</td>
</tr>
<tr>
<td>2006</td>
<td>14,790</td>
<td>13</td>
<td>30,829</td>
<td>11</td>
<td>27,080</td>
<td>9</td>
</tr>
<tr>
<td>2007</td>
<td>18,340</td>
<td>14</td>
<td>37,200</td>
<td>11</td>
<td>35,430</td>
<td>31</td>
</tr>
<tr>
<td>2008</td>
<td>20,917</td>
<td>3</td>
<td>41,235</td>
<td>0</td>
<td>34,940</td>
<td>(1)</td>
</tr>
<tr>
<td>2009</td>
<td>21,476</td>
<td>1</td>
<td>41,188</td>
<td>(1)</td>
<td>37,090</td>
<td>6</td>
</tr>
<tr>
<td>2010</td>
<td>28,124</td>
<td>13</td>
<td>52,604</td>
<td>11</td>
<td>45,890</td>
<td>24</td>
</tr>
<tr>
<td>2011</td>
<td>36,710</td>
<td>22</td>
<td>67,145</td>
<td>7</td>
<td>55,220</td>
<td>20</td>
</tr>
<tr>
<td>2012</td>
<td>43,029</td>
<td>9</td>
<td>77,145</td>
<td>7</td>
<td>61,900</td>
<td>12</td>
</tr>
<tr>
<td>2013</td>
<td>51,549</td>
<td>11</td>
<td>90,746</td>
<td>9</td>
<td>71,620</td>
<td>16</td>
</tr>
<tr>
<td>2014</td>
<td>55,523</td>
<td>(1)</td>
<td>96,075</td>
<td>(3)</td>
<td>76,300</td>
<td>7</td>
</tr>
<tr>
<td>2015</td>
<td>46,178</td>
<td>(20)</td>
<td>78,586</td>
<td>(22)</td>
<td>..</td>
<td>..</td>
</tr>
</tbody>
</table>

Source of data: World Bank databank

Table 4: SPSS Data Analysis

<table>
<thead>
<tr>
<th>Water usage</th>
<th>Waste</th>
<th>Air quality Monitoring Stations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Water treated (m³/day)</td>
<td>Average consumption of water (‘000m³/day)</td>
</tr>
<tr>
<td>GDP (current million US$)</td>
<td>H11</td>
<td>H12</td>
</tr>
<tr>
<td>Pearson’s r</td>
<td>0.89</td>
<td>0.82</td>
</tr>
<tr>
<td>P-value</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Sig level</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>R²</td>
<td>79%</td>
<td>67%</td>
</tr>
<tr>
<td>GDP pc (current US$)</td>
<td>H21</td>
<td>H22</td>
</tr>
<tr>
<td>Pearson’s r</td>
<td>0.89</td>
<td>0.827</td>
</tr>
<tr>
<td>P-value</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Sig level</td>
<td>0.01</td>
<td>0.01</td>
</tr>
</tbody>
</table>

© Copyright by author(s)
The table 2 displays the chosen variables data for the environment. As can be seen, not all the data show a continuous trend.

The waste water treated (measured on cubic meter per day), had a steady increase from 2002 till 2015 with the exception of the years 2008, 2011 and 2015.

As for the average of water consumption (measured in cubic meter per day), also had a steady increase with the exception of 2012.

The Solid waste incinerated, measured in tons had seen a continuous increase of volume.

The Construction waste, measured in cubic meters, had an unusual increase in 2007, coming back in 2008 to the previous growing trend.

Untreated waste transported to the landfill had a very erratic trend. However, sub products produced from the incineration (in tons), grew continuously except in 2015, when had an abrupt increase.

Regarding the number of days with bad or very bad air quality (per year in four monitoring stations), there cannot be found a continuous increase. It had three different stages: an increase trend till 2008; from 2009 till 2012 decreased; and increased again in 2013 till 2015.

The table 3 shows the data chosen for the economic performance and well described on the literature review. As such, all aggregates showed a consistent increase of growth with the exception of 2015.

From table 4 shows a summary of correlation analysis results made with SPSS 20. From this table we could learn that both the indicators chosen for water usage, have a high significant relationship with economic growth and economic development. In other words, the waste water treated and the water consumption, seems to have a positive relationship with the economic indicators.
Regarding the solid waste, the chosen indicators solid waste incineration, construction waste and the sub products from incineration showed a strong positive significant relationship. However, the untreated waste sent directly to the landfill didn't show relevant relationship.

Regarding the air quality monitoring stations, only the downtown roadside monitoring station showed relevant relationship with the economic performance indicators. The evolution of the other emissions monitoring stations didn't show any relevant relationship with the economic growth and economic development indicators studied.

**DISCUSSION**

Macau is an administrative region of China full of peculiarities. An important characteristic is its size. Its 30km² dimension makes the territory dependent on China resources. As water and land area are scarce in Macau, environmental issues should be taken as public policies priorities. After 2010 environment issues were taken more serious by the authorities.

Macau had seen an unprecedented economic and development growth after the liberalization of the gaming industry. Due to that new political orientation, Macau created a strip like the one in Las Vegas. This new gaming area and other created facilities in Macau peninsula add substantial pressure on the environment.

The creation of this new gaming tourism destination, brought to Macau more residents, nonresident workers, tourists and the operation of new mega hotel casino resorts. Evolution in environment data shows that this fact put increasing pressure on Macau resources and environment.

As such, more people and more facilities explains the increase of the water usage. This could be the reason why there is such a strong positive relationship between waste water treated and water consumption and the economic performance indicators.

Solid waste mainly by companies increased due to the Economic growth and correspondingly more solid waste was sent to the incineration plant.

The period of heavy construction of big mega resorts facilities generated huge quantities for construction waste. However, once all mega hotel casino resorts are finished in 2017 or 2018, construction waste is expected to have a considerable reduction. This is why solid waste incinerated and construction waste had showed high correlation with economic performance indicators.

The erratic behavior of the untreated solid waste sent to the landfill and the increase incinerated waste, can be seen as a positive fact in terms of environment impact. It means that, the regardless the economic performance, solid waste pollution is being controlled and sent more to the incinerator than to the landfill.

In terms of air quality concerns, Macau economic development model focused on the gaming industry, contrary to those focused on manufacturing industry, is not a heavy contributed to the degradation of air quality. Only the roadside (downtown) monitoring station seem to have a significant relationship with economic performance. Most probably some other indirect effects, such as traffic and transportation pollution related with the increase of population, the income increase, lack of ecofriendly transportation solutions and casino operations, might be behind of this fact.

**CONCLUSION**

The main purpose of the article was to analyze the evolution of water usage, solid waste and air quality and to find the relationship between these and outcome of the Macau “new” economic development model (implemented in 2001). This article doesn't focus all the environmental issues. Other environmental variables were not covered, such as noise and light impacts.

By identifying the main pollution issues affected by the economic growth and development, this article can help the government to focus on spending on environment policies on a more efficient manner. To overcome the impacts of
economic performance on the identified environment issues, more efforts can be done to mitigating water usage, solid waste pollution and city center air quality.

As potable water and the quality of effluent of raw water is supplied from mainland to local water treatment plant, regional cooperation and coordination is the best measure. Some other measure can be implemented on creating of increasing awareness on residents on water efficiency and promote and supervise the implementation of more water efficient systems used on hotel facilities and industries.

Regarding solid waste and comparing with other modern cities and surrounding regions, Macau is still very backward in terms of recycling. Although residents have realized their part in environmental protection, the fact residents didn't engage into new practices in their daily life. Government solid waste policies, regulations and orientations could leverage achievements on separation of domestic solid waste, purchase of products with eco-labels and rejection of over-packaging. Somehow contradicting, was already announced an increase in the short term of the main incineration plant capacity.

Also improvement on standards and norms on company’s waste generation can contribute to a reduction of small and medium companies generating waste and contributing to a better performance in pollution treatment, recycling and reuse.

As far as construction waste, also can be promoted recycle construction waste measures, where specific materials could be incorporated in the building facilities under construction or separation and given to recycling companies.

An important impact on Macau air quality is the high level of industrial development in the Pearl River Delta Region. Macau geographically location in this region makes Macau air quality exposed by the cross-regional air pollutants within the region and added to the pollution imitations within its boarders. Major air quality measures to be effective should be taken on a regional level.

Findings on the air quality surrogates that the main internal factor affecting air quality is the raise of the number of vehicles circulating in Macau. The government acknowledge that improvements in the air quality are directly related to adjusting land transport policies. The Macau SAR had planned some new measures to be implemented in the middle term. New traffic regulations will be implemented in 2017 has the objective to reduce the private cars circulating. With the delays on the completion of the Light Rail Metro System, Macau transportation public system mostly rely on conventional combustion buses. To provide alternative means transportation to counterbalance the future reduction of private transportation and the delay of the Light Rail Metro System, Macau government should anticipate the acquisition of more ecofriendly buses with low carbon emissions buses. This measure could mitigate the overall carbon emissions linked to consumption of diesel and thus, improve the roadside (central) air quality.

As the environment Kuznets curve is concerned, having the economic and development achievements ensures, these or other measures could led to better environment achievements and position Macau as a developed territory not only on economic and development terms.

REFERENCES


Burden of disease from toxic waste sites in India, Indonesia, and the Philippines in 2010. *Environmental Health Perspectives*, 121 (7), 791-796.


countries/
Modes, Technology, and Collaboration
John Hebbeler, University of Cincinnati, USA
Emily Verba, University of Cincinnati, USA

ABSTRACT

In a fast paced society, how can technology be beneficial for calming one’s mind? What importance can sound and visuals play in an ongoing rich media environment? When effective collaboration takes place and outcomes can be tested and refined, research proves the effects that sound and visuals have on stress reduction in users. Mix in design methods, wrap it in tech and the possibilities are limitless. The Modes mobile application is an atmospheric, introspective, and aesthetically pleasing experience that engages three senses: sight, hearing, and touch. A user begins by opening the app and choosing one of several offered “Modes.” Think of these “Modes” as uniquely designed digital environments with special visuals and sounds programmed within each one. These options will provide users with a plethora of new and exciting media content each time they use the app. Additionally, they can explore the particular “modes” that suit their particular state of mind or desired state of mind (serenity, excitement, frustration, etc.). The user will experience mindfulness practice by acknowledging their present mood state and focusing non-judgmentally on that state. The user is immersed in mesmerizing visuals and sound related to their chosen “Mode”—it’s like they are playing in a visual sandbox. Through simple gestures like tapping, swiping, and pinching, unique visuals and sounds appear (the app responds intelligently to the user’s gestures). The resulting forms are beautiful landscapes that are ephemeral.

Modes is created by Professors John Hebbeler (composer and music technologist) and Emily Verba (visual communication designer). John Hebbeler is a professional musician and composer with over a decade of industry and teaching experience encompassing composition, sound, video, and web production. His past clients include the BBC, the World Association of Symphonic Bands, the International Tuba and Euphonium Association, the United States Jazz Ambassadors, the Cincinnati Opera, and more. His unique expertise in music technology includes a project where interactive trans-media compositions integrate iPhone and Wii remote technology into live audio and visual performances. His original compositions have been distributed by Spotify, iTunes in US and Japan, Amazon, Rhapsody, eMusic, Zune, Tradebit and Last.fm. Emily Verba Fischer is a designer, educator and researcher with several international years of professional graphic design practice in Switzerland, France, New York City, San Francisco, Seattle and Cincinnati. Past projects include print and web media, packaging, art direction, and typographic design. Emily’s academic research concerns information visualization — the creation and study of visual representations of data for ease of understanding by the masses. In our age of information overload, she is interested in information visualization’s potential to marry ultra clear communication with aesthetic sophistication.

Since 2014, Professors Hebbeler and Verba have been involved in this cross-disciplinary endeavor, combining their expertise in composition, music technology, design, and visualization. In March of 2015 they were interviewed for the nationally archived television program “ArtsBridge” (PBS) where they discussed their collaboration. Professors Hebbeler and Verba are collaborating with a team of experts in neuroscience, psychology, mindfulness, and information technology.
Exact And Approximate Solution Of A Two-Stock Inventory System With Forecasting Of Demand And Return Rates

Alireza Pooya, Ferdowsi University of Mashhad, Iran
Morteza Pakdaman, Ferdowsi University of Mashhad, Iran
Lotfī Tadj, Fairleigh Dickinson University, Canada

ABSTRACT

The aim of this paper is to analyze a new inventory system with forecasting of demand and return rates. The proposed model contains two stocks, one for serviceable products and one for returned products. Besides the production planning, we are also interested in forecasting the demand and product return rates. The exact analytical solution of the proposed optimal control model is obtained. Also the ability of neural networks to obtain an approximate solution is examined. Numerical simulations are provided to illustrate the treatment of proposed model.
To Study The Interlinkage Between Quality Of Work-Life And Performance Of Workers In Handicraft Sector Of Canada

Ajay K. Garg, Fairleigh Dickinson University, Canada

ABSTRACT

The economy across the globe is in the dire need of some tool to boost standard of living. The various economy sectors deliver promising pathway for this. The craft/handicraft sector is one of the top solutions for achieving this goal. The Canadian craft sector is increasingly being recognized for higher-grade crafts. The quality of the craft items and productivity in terms of efficiency are the major determinants of performance. The performance of employees working in craft sector is further influenced by their quality of work life. The quality of work life of artisans and workers is decided by various parameters as studied by many researchers. This study has considered various variables to measure both of these important aspects i.e. quality of work life on one hand and performance on other. An attempt has been made to establish a correlation between these aspects in this empirical study. This research has tried to evolve a model exclusively based on the survey conducted among craft workers in British Columbia, Canada.

Keywords: Craft, Performance, Productivity, Quality of Work Life
Engaging Middle Level Learners in Science through Picture Book Read-Alouds
Dr. Carol Bennett, Brigham Young University Hawaii, USA

ABSTRACT

What happens when high interest picture book read-alouds are used in the content areas in middle grade science classrooms? What are the teacher perceptions? What are the student perceptions?

My phenomenological study focused on exploring the experiences of middle level teachers and students engaged in reading and listening to picture books as a strategy in instruction to engage students in science, social studies and math. This study employed qualitative methods of data collection including open-ended interviews, classroom observations, and analysis of written documents. Through gathering descriptive data in the subjects’ own words, clearer interpretation of the subjects’ perspective was possible. To give voice to middle level teachers and students, this method was most appropriate. Major and minor patterns and themes emerged from the analysis of the data. Connections between the theoretical framework and the emerging themes were then explored. My study added to the limited research base on picture book read-alouds in the middle grades.
Teaching Interprofessional Communication
As An Interprofessional Team

Cindy Brooks, MA, Red Deer College, Canada
Nadine Bryk Jones, RPh, BSc.Pharm., Red Deer College, Canada
Terri Granigan, RPh, BSc.Pharm., MSHE, Red Deer College, Canada
Kathryn Pallister, Ph.D., Red Deer College, Canada
Gaylene L. Potter, RN, MSN, Red Deer College, Canada
Candi Raudebaugh, BScOT, MScOT, Red Deer College, Canada
Brandi Ward, LPN, Red Deer College, Canada

ABSTRACT

In 2015, seven instructors from Red Deer College, in Red Deer, Alberta, Canada, representing four disciplines, embarked on a journey to create and teach professional communication skills to college students in three professional programs of study. All four programs collaborated to create INTP 104 - Healthcare Communication, a first-year, required course designed to provide healthcare students, from three programs (Practical Nursing, Pharmacy Technician and Occupational & Physical Therapy Assistant), with foundational collaborative communication skills. Representing the interprofessional faculty team, Cindy Brooks will discuss the process followed, strategies used, and the student views and insights revealed during this innovative course launch, and the future implications for interprofessional teaching and learning at the college level.
Advances And Challenges In Prognostics And Health Management: Need For Interdisciplinary Teaching And Learning

Daeil Kwon, Ulsan National Institute of Science and Technology (UNIST), South Korea

ABSTRACT

Prognostics and Health Management (PHM) is an emerging engineering discipline, which requires comprehensive knowledge from the area of engineering, statistics, and management. Prognostics is the process of predicting the remaining useful life of a product during its expected future use conditions. Prognostics requires fundamental understanding of product failure mechanisms, often referred to as physics-of-failure, as well as appropriate application of mathematical and statistical algorithms. Health management involves decision making activities to evaluate and mitigate the risks associated with product failure. This paper presents recent advances in PHM along with success stories, and discusses practical challenges associated with the need for interdisciplinary teaching learning.

Keywords: Prognostics and Health Management, Interdisciplinary Education, Reliability Engineering, Applied Statistics
Dynamic Adjustment Of Board Structure: Evidence From Chinese Public Listed Companies

Yunhe Li, East China Normal University, China
Xiaotian Tina Zhang, Saint Mary’s College of California, USA

ABSTRACT

Using China’s listed firms during the period of 2007-2013, we explore their dynamic adjustment of board structure. We find that about 45 percentage firms changing board size or board independence during every two years for Chinese listed companies. The adjustment speed in board size for state-owned enterprises (SOEs) is slower than that for privately-owned enterprises (POEs), but that in board independence for SOEs is faster than that for POEs. Moreover, the adjustment in board size is dominated by advisory-driven adjustment for SOEs, while it is dominated by monitoring-driven adjustment for POEs. However, the adjustment in board independence is dominated by monitoring-driven adjustment for SOEs, while it is dominated by advisory-driven for POEs. Further,

The performance for SOEs could be improved by the monitoring-driven adjustment toward the target board size, while that for POEs can be improved by the advisory-driven adjustment. But for board independence, corporate performance could be improved by the advisory-driven adjustment only for POEs. Our findings suggest that the adjustment of board structure for China’s listed firms is partial and asymmetric, and associated with various driven factors.

Keywords: Board Structure; Board Size; Board independence; Board Adjustment; China
Enhancing Active Learning Through The Use Of Technology
Nicole Stegemann, University of Western Sydney, Australia
Sarah Duffy, University of Western Sydney, Australia
Chris Margaritis, University of Western Sydney, Australia
Lisa Rohanek, University of Western Sydney, Australia
Karen Webb, University of Western Sydney, Australia

ABSTRACT
This paper showcases the learning benefits of incorporating the use of technology into active learning. Active learning allows students to apply theoretical frameworks through research and hands-on tasks, while the use of technology enhances the learning outcomes and experience. The combined use provides an interactive and engaging learning environment that tackles the boredom of normal lecture/tutorial formats. A series of active learning tasks incorporating the use of technology have been created to make theoretical frameworks more comprehensible. This paper provides examples of active learning tasks in the marketing subjects brand management and marketing communications where learning activities integrate the use of technology. Our findings show that students’ learning experiences improve and learning outcomes increase through this approach.

INTRODUCTION
Universities worldwide continue to integrate a “blended learning” format into their teaching curriculum. This approach is delivered both online and through the in classroom experience and has been found to offer a range of benefits to students (Allen and Seaman, 2011). Blended learning increases students’ confidence when working in virtual teams, enhances their sense of learner control, and to a certain extent responsibility, as well as improved dialogue skills (Arbaugh, 2008). Blended learning becomes a positive experience when combined with active learning whereby students are required to engage with the learning material (Bates and Pool 2003). Oliver (2000) suggests that blended learning should be evaluated based on: 1) students’ information needs, 2) the useability of technology as well as 3) the selection of provided materials. All of these factors are considered in the study presented here.

The implementation of blended learning seems to emphasise on the introduction of online resources and tasks with the belief that students are technology literate and have the competency in using the available tools (Selwyn et al, 2000). This assumption may lead to negative perceptions about their learning outcomes and experience if this is not the case. While students seem to embrace the variety of learning tools offered through blended learning, they still appreciate and benefit from the social interaction and communication skills they develop in a face-to-face environment (Marriott et al, 2004).

We believe it is not sufficient to focus on the use of technology via online tools only, but it is critical to complement the online experience through the integration of technology in the face-to-face environment. Hence, our research focus is on how technology can facilitate and augment active learning. In particular, when designing this study we had three questions to explore:

1) Can technology applied to enhance active learning improve the students learning experience?
2) Will students’ information needs be enhanced by online and in classroom technology?
3) Are the materials selected appropriate to meet the students learning needs?

This paper is structured as follows, we will first provide an overview of the key concepts; they are active learning and technology. Second we will discuss our empirical work and findings. Third will we will outline our conclusions and directions for future research.

© Copyright by author(s) 446-1 The Clute Institute
ACTIVE LEARNING

The collective and participative model of learning, known as ‘active learning’ is gaining increasing popularity as the tertiary education sector has experienced a paradigm shift from telling to facilitating (Flores del-Arco & Silva 2016; Strangfeld 2013). There is limited agreement on a precise definition of active learning however, a simple explanation involves students ‘doing’ and ‘thinking about what they are doing’ (Bonwell & Eison 1991). Active learning involves students, rather than have them as passive participants in the learning process. In an active learning environment, the educator’s role is to provide opportunities for students to develop critical thinking skills and direct their own learning. In practice, this fundamentally means that learning activities that once primarily occurred in lectures are moved online or presented in a format to be reviewed prior to class. The instructor then focuses classroom time on learning activities, which rely on higher level engagement and critical thinking skills, based on student preparation (Baepler, Walker & Driessen 2014).

Research indicates that an active learning approach can enhance outcomes for students, institutions and employers. Flores del-Arco & Silva (2016) suggest that active learning can result in a boost in students’ independent and critical thinking and problem solving skills as well as improving academic performance and engagement. It may also lead to higher levels of student satisfaction, engagement and retention (Flores del-Arco & Silva 2016; Braxton, Willis, Jones, Hirschy, & Hartley III 2008). Active learning designs can increase the range of pedagogy across a particular course, thereby enhancing the range of student learning experiences (Cooperstein, S. E., & Kocevar-Weidinger 2004). Barseghian, (2011 cited in Strangfield 2013) extends this argument, suggesting that the most important benefit of active learning is that it allows the instructor more ‘hands on’ time to interact with students. This may lead to a deeper understanding by students and allow the educator to engage in more effective formative assessment of learning.

As well as its demonstrated benefits, active learning also poses challenges for both students and educators. Michael (2007) highlights 3 key challenges for effective active learning. These include pedagogy, instructor / faculty issues and student characteristics. A major assumption with active learning is that students are motivated, willing and able to drive their own learning experience and that they have the necessary skills and aptitude for this mode of education (Michael 2007). Brooks, More, and Leslie (2009) highlight the challenge of the assumption that students come to an active learning arena equipped with the necessary, literacy and numeracy skills. They specifically highlight the growing number of International University students whose first language may not be English. Further, successful active learning requires independent preparation by students and the use of online materials (Nguyen, Yu, Japutra, Chen 2015). This implies considered preparation and planning by educational institutions, whereby the educator is expected to re-organise the time both inside and outside of the classroom (Flores del-Arco & Silva 2016). This presents a challenge to educators as they are left to determine the best method of delivering material outside of the classroom as well as effective in class activities. Many educators see this as a significant pressure on their already limited time schedules (Michael 2007).

Despite some of the challenges presented by active learning, it is clear that it is the basis for future developments in modern higher education teaching and learning practice. As educators, rather than viewing active learning as a problem to be dealt with, we can embrace the willingness of students to use technology to our advantage and create innovative and engaging content that benefits students, Universities and industry.

TECHNOLOGY

Information technology promises a lot to higher education, To motivate, excite and encourage learners to further engage and grow higher order thinking skills and application of complex concepts. According to Riasati, Allahyar and Tan (2012), integration of technology improves students' engagement and enhances their motivation in accomplishing their tasks. Whilst a percentage of education environments have not embraced technology, there is substantial and notable growth in technological driven classrooms with impressive results on improved student performance and engagement. Bowden and D’Alessandro (2011) suggested that technology is a major force in shaping student interactions and therefore would be appropriate for further engagement with technology to co-create value in the higher education sector. Moreover it has been suggested that learning involving technology may enhance critical thinking, active learning and higher order thinking skills critical to future success (Hopson, Simms & Knezek 2002). Whilst a never ending continuum, Atkins (1993) argues that technology aided learning can expand the pedagogical
learning approach. Atkins calls for “richer and more comprehensive interactions between learning and material” (p110).

However, not all classrooms are adopting the approach. Leidner and Jarvenpaa (1995) argued that academic institutions lag business by roughly a decade in the adoption of new practice. Even today the use of propriety software is still the primary teaching tool in many academic classrooms (Foltin, Fodrek, Blaho & Murgas 2011). It should be remembered that online active learning places students at the centre of their learning and allows them to take responsibility for their learning, allowing for the co-creation of content in education. Furthermore Kelman (1989) cited in Hopson et al. (2002) identifies that higher order thinking skills are an area that could be improved through engaging with technology and ultimately engaging and motivating students to act upon their learning, increasing academic outcomes, which will have a further benefit of meeting employer demands and giving each student the opportunity to participate with ease.

Technology can improve participation in learning by providing a barrier of anonymity. This anonymity afforded by the use of technology allows quieter, introverted or fearful students to engage without the fear of embarrassment that may occur in a standard classroom environment. The increase in technology therefore aims to remove the fear of learning and participation with students to provide a safe space, which allows them to freely answer and participate in learning without judgment (Ryan 2013). Hopson et al (2002) believes technology enhances student learning, particularly when students engage with the technology directly in an active learning way. The engagement with technology aids learners in actually “doing” as opposed to “listening”, a movement from passive to active.

IMPLEMENTATION

We developed active learning activities delivered through technology, with the goal of engaging our students and creating a hands-on experience with the theoretical frameworks. The subjects were two undergraduate units: ‘Marketing Communications’ and ‘Brand and Product Management’.

Part of our active learning framework is also the incorporation of the flipped classroom model where, instead of lectures, students study and engage with the content prior to class and then engage in activity based workshops for the lesson, facilitated by the educator. The class then provides a forum for students to share their learning and interact with other students in activities that are enabled via the use of technology.

The activities combine the use of group digital workstations in-class, and online group activities which they completed at home, prior to the class. Below are two examples of activities the students were asked to participate in.

In class:

Our collaborative learning spaces allow for the delivery of blended learning workshops in a technology rich environment. This is a combination of the students bringing their own devices (tablets and laptops), the educators’ digital workstation, multiple projectors casting to the walls, as well as student group workstations or terminals with built in PCs that allow students to interact with activities and share them with each other. The educator can choose to cast their work to be displayed to the whole class via the projector – that is, any students’ screen can be shown on the main projected screen to the whole class. By having access to this technology, students can look up content, collaborate, apply their learning, and provide informed answers. An example of one such activity follows.

Duration of activity: 45 minutes

Group size: 4 to 6 students

1. Students are asked to construct a visual representation of the Customer Based Brand Equity (CBBE) model using the brand they had been allocated the week before.
   [In the past, students were asked to complete this activity with cardboard or butchers paper and imagery literally cut and pasted from magazines and catalogues to create a visual representation of their brands CBBE pyramid.]
2. Using their computer terminals or their own devices, students search for images online that can represent the brand and apply the images to the relevant sections of an online digital version of the CBBE pyramid. The pyramid is worked on collaboratively by all students and changes are live and visible to all.

3. Once completed, the educator takes turns going around the groups and allowing them to explain and justify their CBBE pyramid and the images they applied to it. As each group presents, the educator can cast the pyramid from their terminals to the larger wall projection for the whole class to see.

4. Each student is able to see how others have applied their learning of the theoretical framework to a real-world example and they get to save and keep a copy of the pyramid they created as a group for themselves.

5. The educator can download all the CBBE pyramids created by each group and can chose to distribute these to all students for their reference, and/or collect and use for formative assessment purposes.

Our experiences with active learning have provided more engaging experiences for students as well as evidence of increased understanding via application. However, the application via technology adds another element to student engagement, streamlines the process, and allows for ease of contribution, collaboration, and sharing.

At home:

Students were required to engage with the content prior to class and complete pre-work activities that would then be shared in the upcoming class with their group, and with the whole class. This ranged from blog style commentaries where they were also required to comment on two other blogs, to interactive online activities delivered through online software called LAMS (Learning Activity Management System) via the Blackboard online portal. The activities were relatively brief, incorporated real-world, relatable examples and consisted of a variety of different activity types.

Duration of activity: 30 mins to 1 hour (not including readings)

1. Students are asked to access and complete the LAMS activity prior to attending class.

2. The LAMS activity consists of a series of guided mini activities on the topics of Customer Based Brand Equity and Brand Positioning consisting of:
   a. A short multiple-choice quiz, with feedback if correct or incorrect. If incorrect, an explanation of the theory behind the correct answer(s) is given.
   b. A reading of a brief (100 word) excerpt of theory on the concept of ‘Brand Knowledge’ that will assist the students in the next two activities.
   c. A simulated piece of marketing research presented as a poll of their Brand Awareness of sports brands – that is, they are asked to list all the sports brands they can think of. As more students complete the activity, they can see the aggregate of the results. This is based on real world application of Brand Awareness research.
   d. Students are asked to consider the brand ‘Nike’ and using the mind-map tool in LAMS, create a mind-map of their positive associations and negative associations with the brand.
   e. The next activity are three true/false questions with immediate feedback on Brand Positioning.
   f. The final activity is a short answer (50 – 100 words) response where students are asked to explain the difference between the two concepts of POD (Points-of Difference) and POP (Points of Parity).
   g. Lastly, students are stepped through a series of links for further resources; a forum for discussion on the week’s topics; and a final message confirming completion of the task.

3. Students discuss their pre-work with their groups in that week’s class, and have the opportunity to share their responses with the whole class.

Educators provide feedback on these online activities and provide a grade that contributes to their overall mark for participation, understanding and application of the key principles of the topic. The best use of these exercises is when reviewed in class the students can discuss and share their responses. These pre-work activities ensure students are coming to class prepared, with an understanding of the key concepts and theories of the topic and have already had an opportunity to apply them.
FINDINGS

Formal and informal student feedback showed a positive attitude towards the use of technology in face-to-face classes. We administered an online survey using Survey Gizmo as well as used student comments provided through the formal university feedback system.

In this research, 200 students participated in our survey of which 184 were useable. As shown in Table 1, male students slightly outweighed their female peers (107 male, 77 female), and nearly 96% of students were local undergraduate business students.

<table>
<thead>
<tr>
<th>Table 1: Student Demographics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>• Male</td>
</tr>
<tr>
<td>• Female</td>
</tr>
<tr>
<td>International</td>
</tr>
<tr>
<td>• Yes</td>
</tr>
<tr>
<td>• No</td>
</tr>
<tr>
<td>Work</td>
</tr>
<tr>
<td>• Full-time</td>
</tr>
<tr>
<td>• Part-time</td>
</tr>
<tr>
<td>• Casual</td>
</tr>
<tr>
<td>Don’t work</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

As seen in Table 2, the survey results (out of 5) showed that students were positive towards the use of technology in the classroom with modes of 4 for most items.

Overall, there was a preference for interactive learning activities incorporating technology (Item 5: 3.58). Students expressed enjoyment of interactive learning activities (Item 4: 3.74), and the use of technology in the classroom (item 2: 3.93). They also thought that they learned more through this approach (item 1: 3.85), and found classes more engaging (item 3: 3.72).

When considering the impact of gender, we didn’t find significant difference. Male students seemed to enjoy interactive learning activities and the incorporation of technology slightly more than their female counterparts.
Table 2: Means and Impact of Gender

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Overall</th>
<th>Gender Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Mod</td>
</tr>
<tr>
<td>1</td>
<td>3.85</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>3.93</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>3.72</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>3.74</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>3.58</td>
<td>4</td>
</tr>
</tbody>
</table>

Students’ qualitative evaluation of the subject centred around feeling “involved, engaged and interested”. For example, one student commented: “I really loved this unit, loved the weekly activities. It forced me in a good way to go through the textbook therefore come to class prepared.” Another student said: “I enjoyed the interactions between the other students and the lecturer as it was a casual yet informative learning space”. These comments suggest that technology used to facilitate active learning is creating engaged learners.

**CONCLUSION**

Based on these positive preliminary findings, we call for further understanding of how technology applied using an active learning approach can enhance the learning experience of undergraduate marketing students. Returning to the three questions that framed this research, we are confident that we are pursuing a teaching methodology that is creating positive outcomes for the students. This work, although preliminary makes two important contributions. The first is for tertiary level educators, we provide empirical evidence that the use of technology has a positive impact on students learning experience and enjoyment in the classroom. Not only do students like class more, but they perceive that they learn more. Although not a focus of this study, these results may lead to higher retention rates and better employment outcomes after University. Second, we confirm the theoretical suggestion that technology can move learners from a “passive” to an “active” state.

**LIMITATIONS**

There are a number of limitations for this work that are worth highlighting. First, the sample was comprised of mostly domestic students. Thus, the findings may have low generalisability to cohorts that have a significant number of international students. Second, our sample size is small. Third, the study relies on data from a single teaching period.

**FUTURE RESEARCH**

To overcome the limitations mentioned, further studies with larger sample sizes, a more diverse student body and conducted longitudinally will shed further light on this important area of educational research. It would also be interesting to consider the wider implications and explore if this approach improves academic outcomes, retention rates and employment prospects.
REFERENCES

Allen, I. Elaine; Seaman, Jeff (2011) Going the Distance: Online Education in the United States Sloan Consortium, Newburyport, MA USA
Contemporary Usage Of The Zero-Derivational Denomination Verbs
Lydia Callahan, Hankuk University of Foreign Studies, South Korea
Sun-jin Kim, Hankuk University of Foreign Studies, South Korea
Emily Corbett, Hankuk University of Foreign Studies, South Korea
Chai-hyeon Kim, Hankuk University of Foreign Studies, South Korea
Seok-han Lee, Hankuk University of Foreign Studies, South Korea

INTRODUCTION
Language is an ever-changing tool. It serves the human race with one of the most vital acts: communication. As civilization develops, the need for corresponding changes in language also becomes necessary. Benveniste (1971) asserts that “language is in fact employed as the instrument of communication” and how “the behavior of language admits of a behaviorist description, in terms of stimulus and response.” Since language is a tool for better communication, it is only fitting that it responds (adjusts) to the stimulus (needs) of the people living in a certain time period.

One of the changes that can be easily observed, and is implemented naturally, in language is denominalization. According to Pinker (1994), the “easy conversion of nouns to verbs” was always a part of English and it is what makes “English, English.” From Shakespeare’s use of the word ‘safe’ as a verb in ‘Antony and Cleopatra’ with “And that which most with you should safe my going, Is Fulvia’s death” to the use of Xerox as a verb, denominalization has had its role in making language more effective and practical.

The goal of this study was, thus, to reflect this change in language and understand how it is applied to the nouns that are verbified, or denominalized. The purpose was to search for the reason why denominalization in English occurs to this day and whether, if at all, there is a particular set of patterns of the phenomenon.

Keywords: Denominal Verbs, Nominalization, Zero-Derivation, Trending Nouns

TRENDING NOUNS DEFINED
Nouns that can be verbified, or denominalized, can be divided into two parts depending on their age. One is classic nouns and the other is trending nouns. For the purpose of this research, ‘trending’ nouns on the survey are the ones that were formed or became popular after the year of 1950, and the rest of them are classified as ‘classic.’

Classic nouns, throughout history, are nouns which were first made as a noun like 'access' or 'progress' then became verbified. In other words, they are naturally regarded not only as a noun but as a verb as well. Also, there are nouns which were only used as a noun but attained new meaning as a verb such as the word 'bookmark' and 'text.' Their original meaning of an object to mark one’s page in a book (bookmark) and written words (text) has changed to ‘bookmark’ a page and sending a ‘text’ with the development of the technology. The examples above can be said that they represent the cases of ‘classic’ nouns.

On the other hand, trending nouns are relatively new nouns which are mostly proper nouns or newly introduced concepts, objects or actions. For example, 'Google' and 'Xerox' were first introduced as nouns, to be more specific, product brands. In time, however, because many people were making actions via the product (noun), there was consent socially with the people who used the product to use them as a verb. One characteristic of the trending verbs is that they are very closely tied to the origin of the word. It represents the action of what the product or service provides. To Google means to search for something in Google’s search engine and Xerox means to make a photocopy. As the market share of the brand increases and more people start to use it, the usage of the word as a verb also increases.
Likewise, if the brand starts to lose its shares, the frequency of the usage of the word decreases along with it. The noun and verb Xerox is almost no longer used in today’s office place as it was used in reference to their printers that have been replaced with other products. In Xerox’s place, classic verbs are being used once again.

Another example of trending nouns being denominalized is when they are action-based. When a noun has a very specific action related to it, it has the tendency of being formed into a verb. For example, the words ‘ski’ and ‘snowboard’ show strong actions that are easily thought of and draws an image in people’s minds. When such a noun is created, it requires a verb to articulate the action being done; in the cases of these action-based nouns, it is easier to verbify them.

I Seoul U?

In October of 2015, the new slogan ‘I Seoul U(You)’ was introduced to promote the city internationally. Unfortunately, the meaning of new slogan is confusing to Seoulites and native speakers of English.

In the Korean language, verbs indicating an action are accompanied with the suffix “-hada.” English, on the other hand, has a way of converting nouns to verbs without a suffix. This word formation rule is called zero-derivation without adding any derivational suffix. For example, verbs ‘progress’ and ‘access’ are introduced as nouns first but now they are used as a verb (Anthony 2010). The reason for this change is that there is a need for an expression that accompanies a meaning of action. Also, the trending nouns such as ‘email’ or ‘Facebook’ are denominalized to express such meanings of action. In these terms, there would need to be a meaning of action that could be widely accepted for the word ‘Seoul’ in the slogan ‘I Seoul You’ for it to be acceptable as a verb.

The biggest problem with the slogan is that the word ‘Seoul’ does not have any meaning other than the capital of South Korea. People in Korea, including the international community, have not had the social consent on the meaning of the denominalized ‘Seoul.’ One reason is that although it is syntactically acceptable, it is not semantically acceptable. The second reason is that it is unprecedented for city names to become denominalized.

However, there are slogans that used denominal verbs in a favorable manner. Copenhagen is a good example. It uses the word ‘open’ in C’open’hagen to include such a meaning in the slogan. In result, the slogan was quite successful to give an image of the ‘opened city.’ The direction that Korea should seek, in successfully verbifying its capital, should be in finding a meaning of ‘action’ that can be associated with the word ‘Seoul.’

HYPOTHESIS

The survey’s hypothesis is that the acceptability of the verbified nouns would follow a certain set of rules. The survey, therefore, incorporated various sentences using diverse examples of denominalized verbs. Each of the survey questions were written in three different grammatical usages: simple past, present progressive and gerund.

The projected result was that, out of the three choices, people were going to feel more accustomed to gerunds compared to simple past and present progressive. The main reason for this belief is that denominal verbs originate from nouns. Moreover, when the nouns become denominalized verbs, they can be in either verb or noun positions in a sentence. Gerunds would be in the noun slot while simple past and present progressive are in the verb slot. Trending denominal verbs, including gerunds, are derived from a proper noun. Hence, it is logical to assume that if a verbified noun is in the noun slot in a sentence as a gerund, it would be more acceptable to subjects. For example, the survey contained three different syntactic forms of ‘Facebook’ which are: ‘facebooked’ (simple past), ‘facebooking’ (present progressive), and ‘facebooking’ (gerund). Our assumption is that subjects prefer the gerund form over the first two forms since both Facebook and a gerund form of Facebook have a similar syntactic quality.

RESEARCH MODEL

The research objective was to find if nouns—both classic nouns and trending nouns—could become verbs. To further find results for this research, we have selected a set of nouns containing 12 classic nouns and 22 trending nouns.
Additionally, all of the selected nouns were divided into two groups based on a predicted acceptability as a verb. Therefore, all of the selected nouns for the survey were categorized into group 1 (less likely to become a verb) and group 2 (more likely to become a verb).

Then, we created a survey containing 99 questions with each varying between three different tenses using 33 nouns: simple past, present progressive and gerund. (explanation needed)

In total, we distributed 129 surveys to both native and non-native English speakers inside and outside of Korea. After all of the surveys had been completed, 94 surveys conducted by native English speakers were selected for further analysis. Both men and women of all ages took part in our survey. Those excluded were people who did not use English as their mother tongue.

The nouns used for survey were zero-derivational nouns, which means a word formation (of a new word class) from an existing word (of a different word class) without any change in form (Bauer, 2005). Though the chosen nouns did not require any derivational suffix, the generated sentences included noticeable inflections such as simple past, present progressive and gerund forms. Denominal verbs, in theory, should be able to take all of the verb inflection forms in English, hence, including the sentences with different verb tenses were needed.

The nouns that were used in our research were selected from the six categories of denominal verbs. All forms of denominal verbs were considered, (including instrumental verbs, agent and experiencer verbs, instrument verbs, and locatum verbs) as well as the categories for noun based formations (proper noun/common and classic noun).

Following our hypothesis, our primary analysis led us to divide nouns into two groups; groups that represented the distinction between nouns, regardless of its category, of its likeliness to be accepted as a verb or not. Therefore, from the beginning of our study, we had two types of nouns that were categorized into Group 1 (less likely to become a verb) and Group 2 (more likely to become a verb). Based on the relative implementation of usage in verbs of any given noun, all nouns were considered to belong in either trending or classic nouns in both Group 1 and Group 2. [Table 1]

<table>
<thead>
<tr>
<th>Noun total</th>
<th>Gerund</th>
<th>Pres prog</th>
<th>Past</th>
</tr>
</thead>
<tbody>
<tr>
<td>(n=99)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 1</td>
<td>13</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>(n=39)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 2</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>(n=60)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trending noun</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n=66)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 1</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>(n=18)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 2</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>(n=48)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classic noun</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n=33)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 1</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>(n=21)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 2</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>(n=12)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Participants were individually given a survey to fill out without any further instruction regarding the questions asked. All of the surveys were done electronically. The survey consisted three sections. First, the participants were required to fill out the following demographic information:
Second, the participants were told to answer if each of the 99 English sentences were correct or incorrect. The 99 sentences contained a variety of three main tenses: simple past, present progressive, and gerund. Examples of these sentences are as follows:

- **Almond:** “I am almonding so I can lose my weight.” (present progressive)
- **FaceTime:** “Garry was FaceTiming his friend in New York.” (present progressive)
- **Snowboard:** “I snowboarded last night, and it was so cold!” (simple past)
- **FaceTime:** “He didn't answer when I first FaceTimed him.” (simple past)
- **Whatsapp:** “Whatsapping during professor Keating's lecture is not a good idea.” (gerund)
- **Fedex:** “Fedexing packages in this town is not an easy task.” (gerund)

In theory, trending denominal verbs must accept all of the English verb tenses. To test the theory, we have provided two verb tenses: simple past and present progressive. Simple present and future tenses were eliminated as the forms are identical to the original nouns; hence, verb tenses with inflection forms were selected.

Third, after evaluating 99 sentences, participants were then given an open-ended question:

- “Please explain the meaning of this sentence, “I Seoul you.”

This question was asked of the participants to see if the noun ‘Seoul’ could be verbified and hold meaning. Overall, the survey took roughly 7-10 minutes for each participant to complete.

**SURVEY RESULTS**

Among 94 answers, subjects answered that 52.07% of the sentences were correct and 47.93% of the sentences were incorrect. Though there is no significant difference between correct and incorrect sentences, the answers revealed interesting results. Initially, the given nouns were divided into two groups. Group 1 consisted nouns that are uncommon to use them as verbs and group 2 consisted nouns that our team thought commonly acceptable such as Google and Xerox. Nearly 80% of the subjects answered that the sentences in group 1 were incorrect and 72% of the subjects thought the sentences in group 2 were correct. [Table 2.1]

<table>
<thead>
<tr>
<th></th>
<th>Correct (%)</th>
<th>Incorrect (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1 (n=39)</td>
<td>20.85</td>
<td>79.15</td>
<td>100</td>
</tr>
<tr>
<td>Group 2 (n=60)</td>
<td>72.38</td>
<td>27.62</td>
<td>100</td>
</tr>
</tbody>
</table>

Then, is there a difference between classical and trending nouns? The results between group 1 and group 2 were different. For group 1, nouns that are less likely to verbify, no significant difference was found. Among 39 sentences generated from 13 nouns, 21 sentences consisted classic nouns and 18 sentences consisted trending nouns. Subjects answered that 80% of the sentences using classic nouns were correct and 78% of the sentences with trending nouns were correct.

For group 2 with nouns that are likely to verbify, among 60 sentences generated from 20 nouns, 12 sentences consisted classic nouns and 48 sentences consisted trending nouns. The number of trending nouns in group 2 is significantly higher than group 1 because many nouns became popular in the past decade were included such as Skype, YouTube...
and Whatsapp. Subjects answered that 65.34% of the sentences with classic nouns were correct and 74.13% of the sentences with trending nouns were correct. Compare to group 1’s result, the difference between classic nouns and trending nouns are significant as subjects thought trending denominal verbs were 10% more correct than the sentences with classic nouns. [Table 2.2]

<table>
<thead>
<tr>
<th>Noun Category</th>
<th>Correct (%)</th>
<th>Incorrect (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1 (n=39)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C (n=21)</td>
<td>19.91</td>
<td>80.09</td>
<td>100</td>
</tr>
<tr>
<td>T (n=18)</td>
<td>21.93</td>
<td>78.07</td>
<td>100</td>
</tr>
<tr>
<td>Group 2 (n=60)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C (n=12)</td>
<td>65.34</td>
<td>34.66</td>
<td>100</td>
</tr>
<tr>
<td>T (n=48)</td>
<td>74.13</td>
<td>25.87</td>
<td>100</td>
</tr>
</tbody>
</table>

Another assumption was that younger people were more likely to use trending denominal verbs. However, the results did not reveal statistical significance regarding age. From the demographic information in the survey, the respondents were divided into two age groups: 24 years or younger and over 24 years. 25% of the respondents were 24 years or younger, and 75% of them were over 24 years. Regarding the data they have provided, there was no statistical difference between younger and older respondents. Though the team’s initial assumption was that the age difference between respondents would suggest a difference regarding using trending nouns, the result revealed that younger respondents do not necessarily prefer to verbify trending nouns than the other group.

The hypothesis of the survey was that subjects would prefer gerund forms over verb inflections. However, the result was the opposite. Among 21 classic nouns in group 1, approximately 15% of the subjects thought the sentences with gerund forms were correct while past and present progressive sentences were 26% and 19% correct. Sentences with present progressive tense were 4% more correct while sentences with past tense were 11% more correct. [Table 2.3]

<table>
<thead>
<tr>
<th>Noun Category</th>
<th>Inflection</th>
<th>Correct (%)</th>
<th>Incorrect (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1 (n=39)</td>
<td>Classic (n=21)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>gerund (n=7)</td>
<td>14.59</td>
<td>85.41</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Past (n=7)</td>
<td>26.29</td>
<td>73.71</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>presprog (n=7)</td>
<td>18.84</td>
<td>81.16</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

In group 2, out of 48 sentences with trending nouns, subjects answered that nearly 70% of the sentences with gerund form were correct whereas sentences with past and present progressive inflections were 76% correct. Sentences with past and present progressive verb tenses were approximately 6% more correct than that with gerunds. [Table 2.4]
### Table 2.4

<table>
<thead>
<tr>
<th>Noun Category</th>
<th>Inflection</th>
<th>Correct (%)</th>
<th>Incorrect (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group 2</strong> (n=60)</td>
<td>Gerund (n=16)</td>
<td>69.81</td>
<td>30.19</td>
<td>100</td>
</tr>
<tr>
<td>Past (n=16)</td>
<td>76.19</td>
<td>23.81</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Pres. Prog (n=16)</td>
<td>76.39</td>
<td>23.61</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

### ANALYSIS

The initial hypothesis, in short, was that because the gerund form of the denominalized word is closer syntactically, or because it is in the same ‘slot’ as the noun that it was denominalized from, it would be considered as being more correct. However, after the survey and analyzing the results, the team found out that the hypothesis was indeed wrong. To start with the conclusion, the reason behind this was that people’s decision on whether or not a denominalized word was acceptable was based on semantics, not syntax. In other words, although verbified gerunds may be closer to the grammatical use of the original noun, they are further away from it semantically.

In the process of verbification, it can be said that there are two semantic phases. First, the ‘action phase’ and second, the ‘gerund phase.’ A noun first becomes a verb, in order to describe the action that is done with using the noun. For example, the noun ‘email’ is given a new meaning to the ‘action phase’ with the meaning of sending an email as a verb (I am sending an email to Bob). After that, the word changes once again to indicate the action that is being done; in this case ‘emailing’ (Emailing while driving is a bad habit). While the team was focused on the ‘slots’ for which the words fell into, the more important concept for the participants of the survey was the closeness of the use of the word to the original meaning. The verb form of the denominalized word simply adds an action to describe what is being done with the use of the original noun. However, the gerund form adds a different meaning to describe the action itself into a noun, thus forming a different meaning than the original word or the product, making it less acceptable.

In sum, regardless of whether the noun is in the ‘noun slot’ or the ‘verb slot’, the more important aspect of a denominalized word and its correctness to the survey takers is the association with semantics. The analysis is that the word should be closer to the original meaning of the word semantically in order for it to be acceptable.

### CONCLUSION

In conclusion, language is ever changing. Denominalization has made the English language more practical and effective for everyday life. Although until now, there has been no direct pattern found to understand these denominal verbs, there is still a search to find out why this process occurs. People are so exceptionally interested in these types of verbs because of the mystery behind them; to think that the verbs we use today once stemmed from nouns makes you think twice about why they can be both.

Studies of denominalized and zero-derivation verbs have been conducted many times before but our group aimed to find out how people use these verbs and if it mattered as to which ‘slot’ the verbified noun was placed into; the ‘noun slot’ or the ‘verb slot’. Throughout our research, we found that native English speakers see the ‘verb slot’ more fitting for a verbified noun rather than the ‘noun slot’. However, we have not been able to prove why these English speakers see this as more correct. We have some ideas as explained in the analysis but to fully explore them, further research is needed; perhaps in the case of verbified nouns, such as ‘Seoul’ in “I Seoul You,” it is not the syntax that matters but rather the semantics.

### REFERENCES


Calvert, M., & Baron, N. Weirding the Language: How Grammatical Conversions Impact English.


Drawing The Line: Keeping Colorism Out Of The Classroom
Dr. Kevin Stewart, University of Phoenix, USA
Paris Love, University of Phoenix, USA

ABSTRACT

Colorism is a societal problem that largely affects African Americans, Latinos, Asian Americans, and others from ethnic groups in which their skin tones and/or features are considered non-white. Much of the colorism research suggest that individuals with lighter skin benefit from privileges within and across all racial lines whereas those with darker skin tend to be at a disadvantage when it comes to social and economic opportunities and treatment in general. The purpose of this paper is to offer a brief overview of the colorism literature in an effort to provide a contextual basis, demonstrate the pervasiveness of this issue, and discuss strategies that educators may employ to diminish this persistent societal problem in classrooms. This is an important gap in the research to explore because colorism, though a societal issue, need not have implications in the classroom if steps are taken by educators to ensure that all students receive the same educational experience regardless of lightness or darkness of skin.
How Definiteness Is Interpreted From Korean To English And Spanish

Michael Heinz, Hankuk University of Foreign Studies, South Korea
Juyeon Lee, Hankuk University of Foreign Studies, South Korea
Soyoung Park, Hankuk University of Foreign Studies, South Korea

ABSTRACT

In interpretation from Korean, an article-less language, to languages with articles, the interpreter needs to determine the definiteness of noun phrases and employ appropriate articles in the target language, posing additional linguistic and cognitive difficulties for the interpreter. In this study, student interpreters performed consecutive interpretation, and their transcripts were analyzed to examine how they rendered nominal referents from Korean to English and Spanish. In English, students tended to avoid using articles and employed other determiners such as possessives and demonstratives. Most of the uses of alternative determiners were, however, judged unacceptable. In Spanish, students tended to over-use the definite articles. In both groups, there were other distinct patterns of interpreting definiteness, plausibly motivated by certain definite and indefinite contexts.

Keywords: Definiteness; Consecutive Interpretation; English Articles; Spanish Articles; Cognitive Grammar
Breaking Barriers: Saudi Women In Non-Traditional Careers
Suad Dukhaykh, Case Western Reserve University, USA

ABSTRACT
Saudi women constitute only 15.8 percent of private and public positions occupied by nationals, according to statistics from the Central Department of Statistics and Information 2015. Development strategies posed recently by the Saudi government highlight the need to support female higher education and combat sociopolitical barriers to female employment. Despite Saudi women facing substantial challenges in entering the labor market, females have made gains in Saudi society; these include higher literacy rates, greater employment, and moderate rates of entry into both positions of leadership and non-traditional careers. We interviewed 18 women who have successfully gained non-traditional degrees, which gave them access to pursue non-traditional careers and a control group of 12 women who have non-traditional degrees but they either work in traditional careers or not working to generate a grounded theory about their personal and professional “lived lives.” Female entry into non-traditional careers in Saudi Arabia, which are not associated with feminine traits, is a relatively recent trend that warrants examination. While significant gains have been made during recent years in terms of female entry into non-traditional careers, often-insurmountable barriers exist for women seeking to work outside of accepted career paths. This research will contribute to the scarce literature about Saudi women by exploring the barriers and opportunities women encounter in non-traditional careers and how they overcome those barriers. Our findings should be of interest to public policy makers, as we believe that public discourse that supports women’s economic participation and career development may influence the patriarchal traditional attitudes towards women. Furthermore, we believe that stating the experiences of those women will provide role models for next generation who need to be exposed to inspirational women.

ACKNOWLEDGEMENTS
Advisors:
Diana Bilimoria, Ph.D.
Richard Boland, Ph.D.

Submitted in Partial Fulfillment of the Requirements for the Qualitative Research Paper In the Ph.D. in Management –Designing sustainable Systems At the Weatherhead School of Management.
Breaking New Ground: A Service Learning Program For Urban Education Environments

Gina L. Shelley, Weber State University, USA
SueAnn Phillips, Weber State University, USA

ABSTRACT

Rarely has there been a service learning program at the university level that has documented preservice teachers who have volunteered as tutors to work with adults who are recovering drug addicts in the criminal justice system. Project Literacy Instruction to Further Education (Project LIFE) was developed to provide literacy skills and GED tutoring to individuals who are nearing completing in an urban drug court program. Project LIFE has expanded to include participants who are in poverty and in need of tutoring to complete their GED or to assist them in preparing for assessment exams in post-secondary or university programs. The purpose of this mixed-method study was to evaluate an innovative program that is attempting to provide a solution for improving the adult literacy problem in its community. Strategies and methods are provided to help with the challenges in motivation and struggling students. Conclusions showed that the symbiotic relationship between the tutors and participants created a positive learning environment for all; the use of tutors were crucial to the overall success of the program, participants noted a significant increase in their personal reading skills; and the use of both extrinsic and intrinsic rewards were motivational for all the participants. All the participants evaluated Project LIFE as being extremely effective at helping them to accomplish their educational goals.

Keywords: Service Learning, Community Engaged Learning, Criminal Justice, Adult Literacy, GED Programs, Teacher Education, Mixed Methods Research

Breaking New Ground: A Service Learning Program for Urban Education Environments

The importance and impact of service learning programs have shown significant benefits to both students and the community (Baca, 2012). Incorporating service learning at institutions has the possibility of creating not only educated graduates that get hands-on opportunities or experiences, but also individuals who will be civically minded throughout their lives (Bringle & Hatcher, 1996). According to a longitudinal study that included data from 22,236 undergraduates from colleges and universities across the nation, service learning showed significant positive effects in the following areas: academic performance, values, self-efficacy, leadership, choice of a service career, citizenship, and a lifelong desire to participate in service (Astin, Vogelgesang, Ikeda, & Yee, 2000; Smolen, Zhang, & Setwiler, 2013; Stenberg & Whealy, 2009). By integrating the service learning model into an urban based adult literacy program, a symbiotic relationship is formed where the university students are provided with an opportunity to practice what they learn in the classroom while the adult participants benefit from their knowledge and skills.

In a review of literature, research conducted in service learning and adult literacy programs were few in numbers. It was difficult to find any literature from the last decade that involved any service learning in adult literacy programs at all. Studies that were located, were published 15-20 years ago. As such, this shows a gap in the service-learning field that relates to adult literacy programs. The body of literature that most closely resembles service learning in educational literacy programs were studies that involved college students, specifically preservice teachers serving in schools and volunteering to help the English as a Second Language (ESL) students (Bippus, 2011; Cummings, 2009; Grassi, Hanley, & Liston, 2004; Roessingh, 2012).

Background

While the ideals and practices of service learning in higher education are rising in popularity, very little, if any service learning programs are providing any services for reformed drug addicts or to those adults who are in poverty and need
to build their literacy skills or earn their general education diploma (GED). While many GED programs are sponsored by state and local universities’ community outreach programs, they are not able to accept everyone who is interested in their courses due to various regulations, but Project Literacy Instruction to Further Education (LIFE) is unique simply because it was created specifically for those individuals who are involved in criminal justice programs. Project LIFE was established to provide an adult literacy program to a particular population who are mostly forgotten by society. It was originally designed by the principal researcher who was contacted by a local drug court judge, who wanted to provide a way for his clients to have better options for their future once they graduated from drug court. The Project LIFE’s class initial purpose was designed to help the participants increase their literacy skills so they could complete their GED on their own, or enroll in postsecondary to obtain additional training at a technical school, college or university. When Project LIFE began, it was evident that many of those who joined the class were in need of help in order to complete their general education diploma, so the program quickly adjusted to focus on preparing students to pass the GED exams or to prepare them for postsecondary placement exams.

Word quickly spread to other local community service organizations, such as the local department of workforce services (DWS) and the city’s social services center. Both of these organizations began to send referrals of individuals who needed their GED, but did not qualify for services at their particular center due to a variety of reasons. Similar university-based adult literacy programs for English as a Second Language (ESL) students also collaborated with the director of Project LIFE and within the first semester, students were being admitted based upon their level of poverty, status in a family drug court program, or for not being able to qualify for a GED program offered by the city, county, or other university center (due to restrictions placed by the type of grant that funded by the university program or for other undisclosed reasons).

Purpose

As literacy standards rise, so are the increasing populations of adults with low literacy skills, which makes the need for literacy education programs more prevalent than ever (Cuban & Hayes, 2001). According to a study conducted in 2013 by the US Department of Education and the National Institute of Literacy, 32 million adults in the United States can not read, which amounts to 14% of our population. Furthermore, an additional 21% of adults read below a fifth grade level and another 19% of high school graduates do not read on grade level, while 70% of prison inmates cannot read at basic levels (U.S. Department of Education, 2013). In the urban community where Project LIFE takes place, the local high school graduation rate last year was only at 66% (When Just 66 Percent of Ogden Seniors Graduate, 2016). These statistics are similar to those gathered five years ago, which evidences that there exists a huge need for intervention programs in high school to ensure graduated seniors are capable of reading and writing as well as a need to provide greater efforts in providing adult literacy programs in urban communities (2011 Cohort Graduation and Dropout Rate Report, 2011). Project LIFE contributes to both the need for adult literacy outreach programs as well as provides the research community with a model of combining both a service learning model from a university program that administers an urban adult literacy and GED program for those in the criminal justice system. The primary objective that guided this study was to determine how the service learning model has made an impact in the Project LIFE classroom. The next objective was to ascertain which components of Project LIFE were beneficial, motivational, and useful for the participants. Our final purpose was to investigate how Project LIFE has helped the participants achieve their educational goals.

Review of Literature

Surviving high school is challenging enough without adding the additional factors of having a learning disability, or being an ESL student. If a student is a minority, in poverty, from a divorced family, or is living in a toxic environment, then that individual is more likely to dropout of high school (America’s Promise, 2014; Babinski, Corra, & Gifford, 2016; Sterns & Glennie, 2006; Utah 2015 Graduation Rates, 2015). Even if a student does not identify with one of these marginalized groups, there still exists the typical challenge that plagues today’s youth in the classroom, which is the lack of motivation (Babinski, Corra, & Gifford, 2016; Legault, Green-Demers, & Pelletier, 2006), lecture-only teachers, overcrowded classrooms, repetitive teaching methods, redundant worksheets, and impersonal learning environments. All of these can be additional contributing factors to students dropping out of high school, which we have known have known have been ineffective since Dewey (1910). There is rarely just one reason why a student decides to stop attending, but often a compilation of factors (America’s Promise Alliance, 2014). With the inability to
resolve the dropout problem, local communities can provide services and programs for young and mature adults who need a second chance in obtaining their high school education.

GED Tutoring Programs

Many GED programs struggle to show impressive completion rates due to the population of adult students that are in their classes. It is common for adult students to start and then stop coming halfway through the class, which is then viewed as a negative statistic in the overall success of the course. Oftentimes, outside critics (such as policy makers, administrators, economists, and politicians) are too hasty to judge the “success” of a GED program because the programs do not appear to be a good return on the investment of funds, when in fact, the opposite is often the truth. Many adults who stop attending GED programs, may not be simply because they are irresponsible, but because they need to pick up an extra shift at work, for example, to feed their family and pay their bills. Ultimately, adults who attend GED programs (even if they do not complete them) and work on developing their life-long learning skills, benefit from improved health literacy and reduced crime rates (Rose, 2012).

General education degree programs take many forms in different communities. An adult learner can choose to be an independent learner and prepare alone using websites, apps for smartphones, and even workbooks purchased online or at local bookstores. Some communities may offer free or low cost GED classes specifically for ESL or low-income adults. Some cities offer classes that meet daily or once a week. Moreover, if an adult is serious about obtaining his or her GED certificate, there are usually several free or low cost options to prepare for the test, and there may even be some that provide help in paying for the exams also. Because there are more than 40 million Americans who are in need of their high school diploma (Rose, 2012), as a community, we need to be creative about offering different types of educational programs that will appeal to different types of learning styles, social support structures, and schedules.

Many typical GED classes are designed following a traditional model, where the ratio is one teacher to a class of fifteen to thirty students. Very little research has been published that identified GED programs that reduced the typical ratio by utilizing tutors or volunteers to work with the adult learners. One such program, known as Pathways to Persistence, is a relatively new program at Santa Fe College in Gainesville, Florida (Thompson, 2012). This program, although not a GED course, but a program that identified college students who have completed their GED and matched them with a faculty mentor who would meet with them once a week to provide guidance and assistance. Students in this program were given support with campus tutoring services and other peer volunteers to make sure they would be successful (Thompson, 2012).

Service Learning and Literacy Programs

Across many college and university campuses in the United States, service learning is becoming more popular learning model to adopt in all types of courses due to its valuable educational benefits for the students of the course and also for the community members. This model of learning promotes the development of civic responsibility along with cultural competence (Jacoby, 2015). Instead of reading and discussing topics about culture and civic duty, students get out of the classroom and make a difference in their communities, especially since service opportunities and activities can take place quite often in minority neighborhoods, poverty-ridden schools, or among individuals from different countries (Meany, Bohler, Kopf, Hernandez, & Scott, 2008). In an ideal partnership, a university faculty member collaborates with a member or organization in the local community who has a need and can benefit from receiving service from the college students. By establishing shared goals, both the faculty member and the community partner work together to help the students have a learning experience that provides an opportunity to practice and develop real-world expertise, learn job skills, or just provide a needed service (Jacoby, 2015). Throughout the service-learning experience, the university students typically having meaningful experiences and opportunities to apply and synthesize what they are learning in the classroom at their community partner’s site.

Teacher education programs have ideal courses where a service-learning model can be implemented, especially ones that are literacy based. Programs that are set in communities, rather than on college campuses, reconnet undergraduates with the real world and help universities build partnerships with their local communities (Prosser, Levesque, 1997). In one particular teacher education program, professors organized an ESL program for new Karen refugees from Myanmar and Thailand. They worked closely with their community advocates to provide ESL classes
and citizenship courses. The classes provided an opportunity for their university students to practice their ESL teaching and diversity skills by preparing and teaching lessons, interacting with the students, and allowing the refugees to share their personal experiences by way of speaking and writing activities. Through a collection of journals and reflections, the researchers were able to analyze the growth of not only the refugee participants in their courses, but also of the tremendous growth of their preservice teachers in their education programs (Smolen, Zhang, & Detwiler, 2013).

In another study that utilized a “social responsibility option” approach (similar to a service learning model) in a college mathematics course, it discussed how their students tutored inner city at-risk teens at an alternative high school (Zang, Gutmann, & Berk, 2000). The college students volunteered to help in a math class that was specifically designed to help former high school dropouts prepare for the GED exam. In addition to providing math tutoring, the college students would also serve as role models for the youth, thus fulfilling the “social responsibility” element of their service-learning model. By tutoring the high school students, the college students reinforced their own learning of math and both the students and the tutors did better in their courses (Zang, Gutmann, & Berk, 2000).

Theoretical Framework

Service learning is not only an instructional model, but also a viable theoretical framework. It can be traced back to the prominent works of John Dewey’s belief in democracy and teachings of experiential learning in that students need concrete activities in order to learn and to be able to create an awareness of how they can change society and contribute in ways to improve it (Dewey, 1916; Giles, Jr., & Eyler, 1994). Dewey postulated that a student’s education should be more than just acquiring content knowledge by also learning how to live and be a contributing member of the society. Students need to be given experiences to learn how to not be self-centered in their views, but to learn to improve their community and society around them (Fishman & McCarthy, 2010). Service learning “is a method whereby students learn and develop through active participation in thoughtfully organized service that is conducted in and meets the needs of communities” (Lake, Winterbottom, Ethridge, & Kelly, 2015, p. 95).

The framework of service learning used in the Project LIFE program follows a cocurricular model whereby it is not attached to a specific course, but operates “outside of the formal curriculum” (Jacoby, 2015, p. 122). It is not attached to a specific course, but it does obligate the tutors to attend the 1½-hour class each week for twelve consecutive weeks. Additionally, the tutors occasionally have training or planning meeting with program director. Over the course of the semester, the tutors have a possibility of volunteering 18-20 or more hours and can apply them to courses they are currently taking if any of them are requiring service-learning hours. The university that sponsors Project LIFE, has a robust community engaged learning program, and encourages faculty to develop service learning courses and programs to not only benefit the university students, but also to support the needs of the community. At the end of each semester, both the tutors and the participants complete a survey and reflection, which provide a means to not only evaluate the program, but also to help complete the requirements of the service-learning framework that aligns with the community engaged learning program at the university.

Methods

This study followed a multiphase mixed method design that “combined both sequential and concurrent strands over a period of time” (Creswell & Plano Clark, 2011, p. 72) that allowed the researchers to use the data to implement program improvements and changes to meet the overall objectives of Project LIFE. This research style was chosen due to its design that suited program evaluation research methods that “support the development, adaptation, and evaluation of specific programs” (p. 72). Student/participants in Project LIFE regularly complete a program evaluation survey at the end of each semester of class. Throughout the course, one or both of the researchers would meet individually with the students to conduct personal interviews, review the participants’ work, and assist tutoring them in preparation for a GED or college placement exam. Project LIFE’s overall central objective is to promote literacy, as in its name “Literacy Instruction to Further Education,” and its main goal is to encourage and assist its students to continue their education beyond a GED or high school level to further his or her education by continuing on to a trade, vocational, technical, college, or university.

The mixed methods multiphase design utilized a triangulation approach “to obtain different but complementary data on the same topic” (Morse, 1991, p. 122). This style “generally involves the concurrent, but separate, collection and
analysis of quantitative and qualitative data so that the researcher may best understand the research problem” (Creswell & Plano Clark, 2007, p. 64). One of the many benefits of mixed methods research is that “its central premise is that the use of quantitative and qualitative approaches, in combination, provides a better understanding of research problems than either approach alone” (Creswell & Plano Clark, 2007, p. 5). Since this particular study was a longitudinal, multiphase study, and also due to the survey being not only a tool for gathering data for research purposes, but also for program evaluation, the amount and types of data required in order to make accurate assessments needed to be varied and ongoing. Finally, since the purpose of the research study was to determine the effectiveness of Project LIFE; focusing solely on just the quantitative or just the qualitative data would not have provided sufficient data to attempt to understand the research questions.

Even though the multifaceted qualities and flexibility of the multiphase design has much strength, there also exist challenges to this design approach. The researchers must anticipate challenges that may occur during different phases of the study, such as maintaining a consistent number of participants in the program (which was an actual challenge that will be discussed further in the article). Another challenge was that due to being a longitudinal study, it required more resources, such as funding to keep the program running (since it is not a funded as regular university course, but it is offered as a free class), the additional time on top of the faculty member/program director’s usual course load, and the cost of materials (Chromebooks, study guides, novels, notebooks, paper, etc.). Another challenge for the researchers was to determine the best way to interpret the results of the data and then implement them into practice through developing program materials, and finally, to determine the overall effectiveness of the class in relation to the fluctuation in attendance.

Participants in this study consisted of adult students who 18 years or older who were either: in a drug court or family drug court program, or were in a state of poverty. To gather participants, the principal researcher would often attend drug court to promote and recruit students for the program. Additionally, the researcher would meet with representatives from the local department of workforce services, probation officers, and the social services office to publicize the program (since this is where many people who are looking for GED courses are likely to go to for information on local GED classes). Additionally, the program director would regularly meet with other university staff and instructors who direct and teach community literacy courses and other GED programs for ESL students, in order to establish a referral system for each other and to ensure that each program was unique not duplicating one another.

The types of data that were collected and triangulated for this study were: 1) an electronic survey that contained both qualitative and quantitative questions that was given at the end of each semester; 2) oral interviews; and 3) a review of documents that consisted of: attendance records, a reading proficiency analysis, a writing analysis, GED or college ready pretests, class activities, oral readings, and finally the GED exams or college ACCUPLACER tests.

The final group of data that was triangulated in this study came from the students’ class work and new student assessment results. This pool of data was invaluable in helping to determine a student’s readiness for taking one of the GED exams or an ACCUPLACER test, which was required by the university or technical school in order to determine the correct English and math class to place a new student. When a new student would begin Project LIFE (which could occur at any time during the semester), one of the tutors would administer an informal San Diego Quick Test of reading fluency to determine his/her reading level and then complete the GED language arts pretest (if the student was there to earn a GED), or complete a writing sample. From there, the tutor created a personalized study plan and began to work with the student to prepare him/her for their first test.

Program Outcomes

Project LIFE has now completed its first year (three full semesters) with an average class size of 7.5 students each semester, and is now currently in its fourth semester. The typical enrollment at the beginning of each semester ranged from 12-20 applications, but by the end of the semester, usually only about half the students were consistent in their attendance and participation in the class. A pilot survey was completed at the end of its first semester and the official evaluation survey was administered at the end of the second and third semester. Throughout the three consecutive semesters, the program director, met weekly face-to-face or online with the tutors to discuss program issues, the cases
of the individual students, challenges they were having with attendance and learning, problem solve, and collaborate on lesson plans.

As an additional method of communication and a resource tool, all of the tutors were loaned a Chromebook and taught how to use Google Drive and its different software programs. Folders were created and shared among the group to facilitate the distribution of lesson resources, materials, and to keep records of student achievements, tests completed, keep track of students’ progress, and to organize the book groups. The Chromebooks were also an invaluable tool for researching information pertaining to test preparation questions, registering for exams, and finding out college requirements. Many of the students in Project LIFE did not own their own computers, so by working with a tutor and having access to the Chromebook, this also give the students an opportunity to develop their computer literacy skills, which was an additional benefit for many of them. Furthermore, by way of motivating students to attend class, each week they attended the students would receive an entry for a free Chromebook that would be given away on the last day of class each semester. Students could also earn their own Chromebook by completing their GED as well.

In order to avoid the confusion of navigating a large university campus, the Project LIFE class was held at the community education center, which was about a five minute drive from the main campus and closer to the downtown area. This location also eliminated the issue of having to worry about parking passes, providing directions to an obscure building and classroom on campus, and generally intimidating students from attending. Both tutors and students had easy access to the community education center, which was also within a very short walking distance of two bus stops. The center provided two classrooms and a childcare room. The Project LIFE class utilized one classroom and received permission for the childcare room in case the adult students needed to bring their children, since the class was held in the afternoon after public school was released. The childcare room was utilized as an overflow study area when the main classroom became too crowded or when the book groups needed to divide up and have space to discuss their weekly readings.

Each week, Project LIFE met for 1 hour and 30 minutes. The first 30 minutes was utilized as a whole group instruction time for teaching lessons in reading, writing, grammar, or a focus lesson in one of the other content areas, such as social studies, math, or science (depending upon which GED test the majority of the group was working towards). The group lesson sometimes was used for a team building activity, a learning competition, or another motivational, game based learning activity that helped the students to associate learning with enjoyment and success. After the group activity, the book groups would meet for about 10-15 minutes to discuss what they read for the week, identify vocabulary words that were difficult, or talk about other sections they struggled with and then set a reading goal for the following week. The remaining 45-50 minutes was used for studying with their individual tutors. At the beginning of class, students’ names were written on a slip of note card for a small prize and the note cards would then be saved for the Chromebook drawing on the last class of the semester. During class time, if a student felt ready, the program director would register the student for a GED exam or a college Accuplacer exam or practice test. Since the class was free to the students, all expenses were covered by a grant from the university and fees were paid via the program director’s budget.

**Program Evaluation Results and Discussion**

The primary objective that guided this study was to determine how the service-learning model made an impact in the Project LIFE classroom. Community-based service-learning has been gaining precedence over the last couple of decades, not only in teacher education programs, but also in programs across college and university campuses due to its powerful learning abilities (Lake et al. 2015; Meany et al. 2008; Prosser & Levesque, 1997; Roessingh, 2012). In compliance with the service learning model (Ash, Clayton, & Moses, 2009), the tutors must participate in three phases: 1) engage in the service and implement the goals of the program; 2) examine the experience via reflection; and 3) articulate learning (through writing or speaking). Although this study’s purpose was not to share the experiences of the tutors, it is still important to note that the program was modeled on a community engaged/service learning model and that the role of the tutors was significant in the experiences of the participants and in the evaluation of the data. Relating to the overall purpose of this research study to evaluate the effectiveness of the Project LIFE program, the experiences of participants/students was assessed through a different lens, that of the receivers of the service (participants/students) instead of the volunteers (tutors).
In the results from the electronic survey, 92% of the students responded between “important and very important” (the top two answers) to have a tutor to work with during class. In response to a survey question that asked: “Do you plan to continue participating in the Project LIFE class? Why or why not?” One student responded: “Yes, I love the one-on-one tutoring with a tutor who is specialized in a certain area which I may need help with [on a topic] any particular week.” In response to another question that asked students to discuss ways in which they felt that Project LIFE may have helped them so far, another student commented that: “[They are] nice people and I like getting help when needed. The tutor helps me to understand something when I don’t get it.” In an oral interview, another participant remarked about the value of the tutors and said that she: “... couldn’t do it without them. That’s why I’m so happy to be a tutor myself. I want to help others have a better life. I loved them. I had all the tutors to myself the first semester and it was great. I won prizes and awards and I was able begin at the university. They helped me with that.” This particular student has attended Project LIFE since its first semester. She graduated from drug court and began at the university during her second semester of the class and now, during Project LIFE’s fourth semester, is working as a tutor in the class because she loves the program and wants to give back to others.

Another student who has been attending Project LIFE for three semesters reflected about the impact the tutors had on her experience by saying that: “When you were in school, you already experienced having just one teacher and 30 [or more] students. I’ve already failed in that environment. It’s so nice to have that support when you need help. In school you know the teacher doesn’t have the time to actually help you.” When she was asked in her interview about how she has enjoyed or benefitted from working with a personal tutor, she commented that she: “loved the one-on-one attention. Some tutors click better with other [students] and I loved that you could always find someone that you could work with well. Plus, I think it was good for some of the tutors that were more shy, helping them learn how to teach. So it felt like it was good for everyone, not just me.”

The second objective was to ascertain which components of Project LIFE were beneficial, motivational, and useful for the participants. The survey indicated that 100% of the students who have completed it marked that they would recommend Project LIFE to others who need help with their GED or college preparation. They also marked 100% for its location being convenient and accessible; and 85.7% thought the length of the class was the right amount of time. In following up with students about the length of class, some students suggested holding class twice a week, or holding it later in the evening to accommodate work schedules a bit easier. When students were surveyed about how much their personal reading habits have improved, 50% marked the top category of “a great deal,” with even numbers in the next two categories of “much” and “somewhat” at 21.43% each, leaving 7.14% at “little.”

In evaluating the whole group literacy lesson at the beginning of the class, 85.6% of the students marked between the highest two scores of “very useful” and “useful.” Further questions in the oral interview were not asked about the group lesson, but in a review of records, students’ participation was 100% and all of them were engaged, asked questions, and mentioned several times about how much they appreciated the handouts and explanations of difficult grammar topics. The lessons were kept short and students were able to work with their tutors on individual assignments and activities. In the observational notes, the group lesson was received extremely well and the students would often make special requests for their favorite learning games, or for special lessons in areas they were struggling, such as in persuasive writing, lessons in math, history topics, or in science and technical terms.

Since the Project LIFE class was purely optional and the students were not required to attend (as in some cases when a court judge orders a client to obtain a GED before granting graduation from a drug court program), the program director put in place several motivational strategies to encourage students to attend each week. One was the weekly prize drawing and the second was the possibility of winning a Chromebook at the final class of the semester (entries were earned based upon weekly attendance). In the survey, 92.8% of students responded that the weekly prize drawings were “motivating” to “very motivating,” and the possibility of winning the Chromebook was equal at 92.8% “motivating” to “very motivating.” In addition to the chance of winning a Chromebook, any student who has at least an 80% attendance rate for the semester can qualify for a scholarship to have Project LIFE pay for all of the GED tests or be used to apply toward college tuition. On the electronic survey, the students all agreed at 100%, that this was definitely an “extremely valuable” item.

The third and final purpose of this study was to investigate how Project LIFE has helped the participants achieve their educational goals. Understanding that the class is currently in progress, reviewing the data from the previous semesters
was used to determine the program’s success. Clearly, the overall goal is for each individual student to reach his or her educational goal, which for most was to complete the GED, yet with Project LIFE being only in its fourth semester, and understanding the high turnover rate with this population of students, there are a handful who are nearing full completion of their GED. Because the GED consists of four individual exams (language arts, social science, science, and math), it can take an individual anywhere from a few months to a few years to complete it, depending upon multiple factors in their lives. The electronic survey showed that 100% of the students ranked Project LIFE between the highest two scores of “effective” and “extremely effective” at helping them to accomplish their goals. In the oral interviews, one student remarked about how the Project LIFE program has made a difference in her life:

I’d still be on my couch watching TV each day if it wasn’t for [the professor] coming to drug court that day. She should keep going and telling all those people this is available to them. She might need to push them. They just don’t have the motivation, I guess, or maybe they aren’t ready to give up the drugs and change their lives, but she should keep trying.

Another student commented about Project LIFE has helped her to achieve her educational goals by stating that: I haven’t ever felt comfortable in education since 9th grade. I had a horrible experience. I couldn’t do this without Project LIFE. I don’t even know where I would be without Project LIFE. I wouldn’t be able to pay for this. [That’s] why it’s called Project LIFE - because it literally changes people’s lives! I moved here from Alaska and was labeled the ‘dumb kid.’ I was stupid to everyone. I get to come into Project LIFE and they are so happy I’m here and treat me like I’m smart and I’m doing it. One test away from college!

Overall, adult GED classes are a huge challenge; much more than the regular struggles of k-12 education.

Many GED classes are filled with students who struggled with the public school system when they were younger for many reasons, but also because they may have had undiagnosed learning disabilities that contributed to their original lack of success in the public school system (Rose, 2012). Now as adults, they have the responsibilities of work, family, and with Project LIFE students, some (not all) are still recovering from drug addictions, have expensive fines, weekly court appearances, and probation obligations, while others are struggling with transportation and childcare issues. Yet those that have managed to be resilient and continue in the Project LIFE program, are either nearly finished with their GED, have enrolled or are currently attending college, have completed their GED and have gone on to better employment or schooling opportunities, or are successfully studying and preparing for their GED exams.

Conclusions and Recommendations

Project LIFE may have a long way to go before it is a well established adult GED program that serves the needs of several drug court and family drug court programs in surrounding urban communities, but with continued support from its host university, as well as recurrent referrals from social service agencies, local drug courts, the department of workforce services, local probation officers, and other university sponsored community outreach programs, along with the necessary financial assistance from local and national grants, the program hopes to continue to grow and benefit many others in its urban community. The other challenge of continually needing to recruit and train new tutors each semester, remains both an opportunity and area where service-learning can continue to be strengthened. Tutors could receive additional benefits by being required to complete a reflection experience at the end of each semester in addition to the program evaluation survey. Since students can volunteer for Project LIFE from any college or course, some students may be participating to fulfill a course’s service-learning requirement, while other tutors may have different reasons for volunteering, which could be explored to find unified learning objectives to multiple courses at the university.

Recommendations for others who are working in adult GED programs would be to develop strong relationships with their community partners to ensure that both have similar goals and that each have open lines of communication. The program director for Project LIFE was also a full time faculty member for the university, so her time was constrained and she was not provided with additional staff to help run the program, which would have greatly benefitted the organization, growth, and management of the class. As a recommendation, for any GED program, it is a team effort and one person cannot possibly do it alone. Referrals from local agencies were extremely beneficial in supplying the
course with participants, since not all clients in the participating drug court programs were court mandated to attend Project LIFE.

Motivation is another important aspect for adult learning and highly recommended in any adult literacy program. Since many of the participants’ educational experiences were not positive when they were younger, class needed to be different. With Project LIFE, motivation took two forms: both intrinsic and extrinsic. Intrinsically, the individual student had to put forth the effort to study, read, and prepare for the exams. Personal reading materials had to be on high interest topics. Personal study and reading goals were rewarded in class with extra entries for the Chromebook. Extrinsically, the program director made class fun and worth attending by making learning simple, earning entries for a Chromebook from weekly attendance, having a chance to win a prize each week, often having food or treats each class, paying for the GED exam expenses, and awarding the scholarship for their first semester at college/technical school as long as they maintained good attendance.

Finally, adult education courses and GED courses, especially those that serve individuals in the criminal justice program, have to be structured differently than traditional classrooms. The decision to use multiple tutors was not by chance. The one teacher to thirty-student ratio did not work the first time. If these adults are going to rearrange their work and family schedules, and try to make time to attend, class better be worth it. They need to have individualized instruction and they need to feel rewarded when they come. They need to have each and every question answered and they need someone to read aloud to so when they say a word wrong, it can be corrected. They need personal support and a high-five when they get the hard answer right. Finally, they a cheering section when they pass a test.

Project Literacy Instruction to Further Education may not be making huge headlines, and it may not be the best use of university grant funds from an accountant’s perspective, but it is making a difference in the lives of the tutors and the program director who are working and making a changes in the lives of their students every week. It is a priceless investment in the lives of the students who, for the first time for some, are believing in themselves and discovering that they are smart, that they can read and write, and that they can have a future that is more than working at a drive-through window or working the graveyard shift at a gas station. In the words of one student: “That’s why it’s called Project LIFE, because it literally changes people’s lives!”

AUTOBIOGRAPHIES

Gina L. Shelley is the program director for Project LIFE and an assistant professor at Weber State University. She teaches the educational technology, content literacy, and other education courses. She was a former junior high and high school English and Spanish teacher. Her research focuses on service learning, literacy programs, educational technology, and how these topics intersect. She has presented research and conducted workshops nationally and internationally.

SueAnn Phillips volunteered as a tutor and also as a research assistant for this study. She is preparing to be a high school theatre and sociology teacher. She has conducted research nationally and internationally on the high rate of female suicide in rural areas of China.

REFERENCES


English Language Education
And Immigrant Integration In Canada
Author: Lillie Lum, Ph.D., York University, Canada

INTRODUCTION
Knowledge of official language(s), English and/or French, is a key factor in the integration of Canadian immigrants. Language proficiency is necessary in order to participate in the labor market and hence, it is relevant both in terms of their economic attainment and their impact on the economy (Chiswick and Miller, 1994). In addition, language proficiency plays a crucial role in the social adaptation of immigrants and in the social and political cohesion both within and among groups (Chiswick and Miller, 2003). According to Citizenship and Immigration Canada (CIC), "language training is by far the most important settlement service being delivered by CIC across the country. Research shows that, along with finding an appropriate job, language proficiency in English or French is perhaps the greatest barrier to settlement and integration faced by newcomers to Canada" (CIC, 2011a).

Despite the increased recruitment of highly skilled immigrants and their higher levels of human capital, their language skills are still posing a barrier for immigrants who continue to lag behind those who are Canadian-born in many areas such as employment, earnings, healthcare and education. Since language proficiency is so important to immigrant settlement and integration and given the amount of energy and funding invested in language services in Canada, why is the language proficiency of immigrants not superior? How can the discrepancy between the significant monetary investments into language training programs and the modest gains be explained?

Focusing on the role of official language in immigrant integration, this paper will first report the results of a literature review which demonstrates that there is no doubt on the necessity of adequate language skills for newcomers to successfully settle, adapt, and integrate socially, culturally and economically in Canada. This paper attempts to synthesize the literature in order to shed light on the language policy terrain which is not easy to navigate. Then, by outlining what is currently available in the language policy environment, it will ask if the current state of language training in Canada is adequate to assist newcomers in their language acquisition process. The paper concludes with recommendations for designing language education programs which could better address the learning needs of new immigrants. This paper is timely given the magnitude of the language issue and the value of immigrants for Canada’s economic, social, and political vitality.
Author requested nothing in proceedings.
Voluntary Timely Disclosure Prior To Delisting
Hae Young Byun, Kangwon National University, South Korea

ABSTRACT
Sudden Involuntary delisting of public companies has had a bad effect on economies due to the loss of stock value and the loss of confidence on the capital market. Therefore, previous studies have focused on the prediction or prevention model of firm’s delisting event, using various financial and accounting information. However, the timely disclosure, another important information source of companies, never be investigated in connection with the companies that have become delisted. This study investigates the timely disclosure behavior of delisted firms prior to delisting using a sample of firms listed from Korean stock market between 2000 and 2014. The results show that there is a significant correlation between the frequency of timely disclosure and delisted firms prior to delisting from Korean stock market. The companies delisted increase their timely disclosure because they are required or want to deliver the specific information to public on what is going on in firms. Furthermore, the delisted companies are more likely to increase the frequency of timely disclosure getting close to delisting. Consequently, the timely disclosure of delisted firms has capital market effects. The timely disclosure definitely increases the trading volume, but decreases the market value on shares, reflecting price efficiency.

Keywords: Timely Disclosure, Involuntary Delisting, Information Asymmetry, Individual Investors
Cultural Dimensions
Of The Interplay Between Music Consumption And Well-Being
Tae-Il Yoon, Ph. D., Hallym University, South Korea

ABSTRACT
Given that the interplay between music consumption and well-being has been scarcely researched despite its importance, this paper aims to explicate how music consumption in a community rock band is related to culturally constructed happiness. For this purpose, an ethnographic narrative inquiry was conducted with five years of participant observations and in-depth interviews. The findings revealed five themes of musical consumption; namely, release of pent-up emotions, immersion, self-enhancement, self-expression, and sympathy. The contextual factors surrounding the consumption phenomenon were also identified. The findings dovetailed well with shinmyoung, a Korean indigenous term referring to multifaceted restorative pleasure. Thus, this paper proposes a conceptual framework of consumer shinmyoung experiences (CSEs) in the hope of constructing a model to elucidate the interplay between experiential consumption and well-being. The dialectical nature and theoretical potential of the proposed framework are discussed.

Keywords: Music Consumption, Cultural Dimensions Of Happiness, Shinmyoung, Community Rock Band
Increasing Individual Absorptive Capacity
By Teaching Dynamic SQL

Tanya Beaulieu, Utah State University, USA
Pam Dupin-Bryant, Utah State University, USA
David Olsen, Utah State University, USA
(all authors contributed equally and are listed alphabetically)

ABSTRACT

Technology continues to evolve rapidly, and organizations need to constantly evolve to keep up with the latest innovations in hardware, software, and processes to strategically select and manage technology. Underlying these firm capabilities are the employees that monitor, plan, and implement technology improvements, thereby it is critical that organizations have employees that can contribute to firm absorptive capacity and who can strategically take advantage of technology innovations. In this research paper, we examine what type of curriculum MIS undergraduate programs might implement to prepare students for careers in the dynamically evolving realm of technology-infused organizations. We posit that students need to go beyond the adage of “learning how to learn”, but instead need to have the skills and the mindset to compete in a technology-enabled environment. Specifically, we examine a learning module on Dynamic SQL delivered in an advanced database course, and propose how introducing rigorous and complex learning modules can develop and expand students' absorptive capacity resulting in a competitive advantage when entering the workforce.
Leadership Disruption: Challenges And Implications For Teaching Leadership

Maryann G. Billington, Action Leadership Group, LLC, USA

ABSTRACT

At a Clute Conference in 2013, I presented on the leadership changes facing leaders based on the research, consulting, and executive education I was conducting around the world for corporations. In concert with my husband Peter Billington who was a university professor at the time, we developed pedagogical recommendations for those who teach business skills that prepared leaders-to-be for those changes. Much has dramatically changed in the world in the last 4 years to ratchet up demands on leaders in organizations everywhere. This presentation and paper will update the current challenges leaders face and implications for development.

INTRODUCTION

The turmoil in business, politics, economies, and global warming has created upheaval for global and regional organizations alike. The elected, appointed, recruited, selected, or assigned leaders of organizations face new challenges that arise every day that need them to solve problems, create strategy, make decisions, and inspire others to act in the face of uncertainty. And the pace of change is rapid enough to eschew former evolutionary ways to tackle problems and prepare for change. The breathlessness associated with leadership needs to be addressed by updated ways to prepare and guide these leaders. Those who educate, shape, hire, and develop leaders need to monitor the challenges, adapt to the requisite skills and abilities that embrace those challenges, and do so quickly.

Today’s leaders face five principle tests for leadership: V.U.C.A., Glocality, Digital Realm, Emotional Leadership and Rapid Innovation. What those challenges are, implications for leaders, recommendations for competencies and styled responses, and how that translates into content for teaching leadership in executive and college programs will be presented.

RESEARCH METHODOLOGY

The most current research is gathered from the practical experiences I have with 1000s of executives in 100s of companies during my leadership program consulting, development, and delivery. The data, which augments the hypotheses, are drawn from business and academic publications on leadership. Furthermore, the concept of simulation will be introduced with the presentation of leadership vignettes developed by the author based on “real world” situations. Participants will be asked to respond to demonstrate the complexity of leadership.

REFERENCES

Bradberry, Travis, 6 Things Great Leaders Do Differently, Forbes, 1/13/2016
McCarthy, Daniel, Great Leadership Blog, MIT Executive Education, on-going.
Mobile World Congress, 6 Quotes from Digital Leaders that Point to the Digital Revolution’s Future, Barcelona, Spain, February, 2016.
Using New Technologies In Speech Communication To Enhance Cultural Competence
Melva E. Black, EdD., Volunteer State Community College, USA

ABSTRACT

This research is concerned with the incorporation of new technologies in the teaching of cultural competence and diversity in speech communication courses. Specifically, some consideration will be given to how the use of technology enhances student’s knowledge, sensitivity, and interaction with diverse cultures. It will be demonstrated that teaching communication theories and conducting cultural awareness activities is not tantamount to student created podcasts addressing issues of diversity, use of blog posts, apps for interactive learning, and virtual reality tools to improve cultural awareness and engagement. The main premise of this research explores effective communication as secondary to well-meaning competence and engagement with diverse cultures. This approach suggests that establishing respect and mutual relations promotes impartiality and cultural perspicacity. A qualitative analysis, using Intercultural Sensitivity Inventory (Bhawuk & Brislin, 1992) is being used to examine students cultural value orientations and flexibility in adapting to new cultures and persons. Further, the research attempts to ascertain how students in a college level Speech Communication technology flipped class using mixed new technologies increases their level of cultural awareness and sensitivity.
Iconic Representation As An Assessment Of Impact On Critical Thinking
Nicole Simon, PhD, Nassau Community College, USA

ABSTRACT

Online learning platforms recurrently utilize alternative environments for learners to meet and engage in social activities, while attending online courses. This study examined the effect of iconic representation and the inclusion of video lectures and technological efficacy on college learner’s perceived online learning and perception of video usage. The research was conducted in order to investigate the applications of Critical Thinking as applied to interactive multimedia learning within STEM education via Educational Technology. Critical Thinking is a domain of Instructional Systems Design and educational psychology examining the educational repercussions of the brain’s information processing. This is rooted in the cognitive architecture general model that encompasses two vital elements: working memory and long-term memory and their interrelatedness. Recent research has revealed that learning through the video incorporation generally increases the learning and therefore comprehension of information.

Critical thinking is significant to today’s modern learning environment, wherein individuals are tasked with consuming vast amounts of information while examining the complexities of this information. The use of imagery of scientific concepts is a key component in improving Critical Thinking skills while maintaining optimal Cognitive Load within higher education STEM learners. Instructional approaches based on active discovery and problem-based learning is becoming more commonplace in today’s educational forum. Opportunities to alternatively assess learning and evaluate comprehension in a digital learning environment are supportive from both a theoretical perspective and an empirical research perspective.

Keywords: Educational Technology, Iconic Representation, Critical Thinking

INTRODUCTION

Dynamic visualization, such as animations, entail intricate processes, has been found to be beneficial in the composition of laboratory schemata. Educational technology in addition to Instructional Systems Designs (ISD), have often presumed that iconic representations are advantageous when employing kinetic rather than static graphics (de Koning, Tabbers, Rikers, & Pass, 2007). Instructional approaches based on active discovery and problem-based learning using digital games is becoming more commonplace in today’s educational forum. Opportunities to alternatively assess learning and evaluate comprehension in a digital learning environment are supportive from both a theoretical (Price & Moore, 2010) perspective and an empirical research perspective (O’Brien, Lawless, & Schrader, 2010). Using educational games for assessment not only measures previously outlines learning objectives and goals, but allows learners to measure their cognitive load abilities in these scenarios. The purpose of this article is to review the current literature pertaining to educational game play within current curricula and the possible usages as an assessment tool within higher education.

The use of imagery and iconic representation of scientific concepts is a key component in improving Critical Thinking (CT) skills while maintaining optimal Cognitive Load (CL) within higher education STEM learners. Laboratory experiences are a vital component within science education, while rote traditional lab experiments are currently not addressing inquiry nor linking with educational technologies (Simon, 2015). Instructional approaches based on active discovery and problem-based learning using digital games is becoming more commonplace in today’s educational forum. Opportunities to alternatively assess learning and evaluate comprehension in a digital learning environment are supportive from both a theoretical perspective (Prensky, 2001) and an empirical research perspective (O’Brien, Lawless, & Schrader, 2010). Using educational games for assessment not only measures previously outlines learning
objectives and goals, but allows learners to measure their CL abilities in these scenarios.

**Cognitive Load**

The influence of preceding comprehension and cognitive engagement on the efficiency of iconic representation in science conceptualization was assessed. The existing research on learning from science conceptualization has been investigated though the use of cueing (de Koning, Tabbers, Rikers, & Pass, 2007) and color coding (Keller, Gerjets, SCheiter, & Garsoffky, 2006) in an effort to demonstrated a dynamic association to and incorporation of multiple representation of learned knowledge within one another. This leads to the concept of learner control for content manipulation (Keller, Gerjets, Scheiter, & Garsoffky, 2006) as well as guided learning (Homer & Plass, 2010) for learner feedback (Simon, 2015). Research has also identified prior knowledge as a significant determinant (Homer & Plass, 2010) of the efficiency of educational mediation.

![Fig. 1. Force Table narrated visualization with iconic representation (provided by KET Virtual Labs)](image-url)
Methodology

The purpose of this quantitative quasi-experimental study was to determine how the use of iconic representation in virtual science laboratory experiments increases learner CT skills and CL among learner participants at a two-year community college. The predetermined instruments include: the Scientific Attitude Inventory (SAI II) and the Revised Two-Factor Study Process Questionnaire (R-SPQ-2F). The statistical analysis was conducted as to explore the relationships between use of iconic representation and increases in CT Skills and CL ability. This study served to identify which course instructional delivery method will attain: perceived increased CT skills, and increase CL capability within virtual laboratory science experiments either utilizing iconic representation or omitting this depiction. The learners were separated into two pre-existing groups based on random selection of course section. All learners had the same academic background in both mathematics and science from high school. The analysis was aimed at comparing icon experiment treatment to non-icon experiment treatment as to measure both CT skills and CL ability for the purpose of creating new laboratory experiments that raise each variable level for future learners.

Results

The results of the presented study are based on data collected during an academic year. A total of 100 learners participated in the study. Each learner provided informed consent to the collection of this data. All data are anonymized as to avoid any personally identifiable information.

Critical Thinking (CT) skills were assessed as to the extent in which they differed for learners exposed to iconic representation during visualization of the "Force Table" than those with no treatment. Results of the statistical analysis of the repeated measures indicated that the use of icons had some effect on the learning process. The results indicated that the iconic representation in the treatment group does increase the use of CT Skills. The use of CT Skills with icons consisted of two main subscales, deep learning and surface learning. The results showed that learners in the treatment (icon experiment modalities) group had higher levels of CT Skill usage and implementation (as measured by the R-SPQ-2F survey) than learners in the non-treatment (non-icon experiment modalities) group.
The estimated marginal means data (as shown in Fig. 3) shows that the treatment group increased their CT Skills post-experiment.

Fig. 3. Estimated Marginal Means (Pre/Post-lab) R-SPQ-2F Deep Approach Subscales Comparison of Critical Thinking Skills for Iconic-Representation

The graph of estimated marginal means represented a comparison of unequal sample sizes between the treatment group and the non-treatment group. The relationship between the dependent variables depicted a computed average across the levels of within and between subject factors. The graph displays an interaction of the variables pertaining to the usage of virtual and simulated science labs’ effect on Critical Thinking Skills as it relates to deeper levels of learning. The levels of learning, both deep and surface level approaches, correspond to the treatment and non-treatment groups respectively.

The findings from this research are that those learners in the treatment group thought more critically and analytically than learners in the non-treatment group, are consistent with past research on the usage of iconic representation in science laboratory experiments (Kalyuga & Plass, 2007; Plass et al., 2009; Homer & Plass, 2010). The results are significant in that they indicate the use of CT Skills in a deep and surface learning capacity. The research findings denoted that learners are using more in-depth methods for scientific analysis through the use of Critical Thinking. The inclusion of critical thinking, within experimentation, is evident that the progression of synthesis and evaluation of learner material is ongoing (Kalyuga & Plass, 2007; Plass et al., 2009; Homer & Plass, 2010). Furthermore, deep and surface learning strategies were employed more often and in more substantial form from the treatment modality than from the non-treatment modality. The data showed that this was not the case, based on the R-SPQ-2F ANOVA results that indicated learner depth of knowledge was higher than anticipated in the treatment group.

The findings from this research are that those learners in the treatment group thought more critically and analytically than learners in the non-treatment group, are consistent with past research on the usage of iconic representation in laboratory experiments within the science disciplines (Kalyuga & Plass, 2007; Plass et al., 2009). There are three components integral in science education within the domain of higher-order cognitive skills development include: problem-solving, Critical Thinking, and laboratory practice. The results are significant in that they indicate the use of CT Skills in a deep and surface learning capacity. The research findings denoted that learners are using more in-depth methods for scientific analysis through the use of Critical Thinking. The inclusion of critical thinking, within experimentation, is evident that the progression of synthesis and evaluation of learner material is ongoing. Furthermore, deep and surface learning strategies were employed more often and in more substantial form from the treatment modality than from the non-treatment modality. The data showed that this was not the case, based on the R-SPQ-2F ANOVA results that indicated learner depth of knowledge was higher than anticipated in the treatment group.

Summary and conclusion
In this paper, the impact of iconic representation in science laboratory experiments, on learning developing, Critical Thinking (CT) skills and Cognitive Load (CL) capabilities, is studied. A pre/post survey methodology is introduced, as to distinguish learning events during laboratory experimentation. Statistical results are presented that show Critical Thinking Skills can be achieved as well as increased Cognitive Load ability in iconic-based laboratory learning environments. With the incorporation of these learning environments into General Science Study laboratory courses, learners may increase their knowledge base within defined course content areas more expressly directed at the science disciplines. The research study showed that, when utilized properly, simulation software and virtual laboratory experiments can facilitate an environment for learning that develops and fosters Critical Thinking and Cognitive Load gains. These variables will help to maintain or exceed Cognitive Load abilities; explicitly aimed at the scientific disciplines, scientific technology, and overall scientific awareness. Instructional and educational design of a course aids in the determination of whether a learner utilizes deep or surface learning through Critical Thinking and Cognitive Load abilities (Sweller, 2005). Educators need to heed the use of simulations and virtual laboratory experiments in science courses so that their uses are based upon sound instructional theories and best practices (Kalyuga & Plass, 2007; Homer & Plass, 2010; Simon, 2015).

This study offered a discrete perspective for science educators with interests in simulation and virtual laboratory experiments and for educational technologists interested in creating these learning environments. Therefore, it is recommended that science educators and educational technology specialists in higher education fully examine the effectiveness of iconic representation in simulation laboratory experiments in science education. The requirements for learners in General Science Study laboratory courses is to master scientific concepts and engage in meaningful knowledge through learning approaches that can be used for a multitude of educational and career pathways. For the reason that many of these laboratory experiments will never be used by non-science major learners in their academic futures, the results of this research study may support the use of the educational technology instructional methodologies that are not “wet” laboratory based. The current research findings support the use of simulations and virtual laboratory experiment software in science laboratory experiments as long as science educators use the educational technology in a proper manner when designing and implementing instructional design planning for curricula. The results of this study will allow educators to identify that simulations and virtual laboratory experiments play an integral role in science education. Educational technology will only enhance the learning experience, not distract from the outcomes of the science curricula.

**AUTHOR INFORMATION**

Dr. Nicole Simon holds a Ph.D. in Educational Technology and is an Associate Professor at Nassau Community College in the Engineering/Physics/Technology Department. Nicole’s research interests center on improving student learning and engagement with science through increasing access, to scientific inquiry experiences and through raising self-efficacy in science. She focuses specifically at the use of virtual environments to deliver scientific inquiry curricula and science assessments to students. Her expertise in educational technology and online learning allows Dr. Simon to create virtual learning environments for her students that may be used as both assessment tools and for student retention of learned information.

**REFERENCES**


Post-Issues Excess Returns
In Indian Stock Market
Manish Sharma, Doshisha Business School, Japan

ABSTRACT

The data from global financial centers overwhelmingly suggests that investing in the new equity issues is highly profitable. However, we would like to investigate if investing in new issues is profitable in risk adjusted terms, in an emerging market scenario.

In order to better understand the environment that the investors in a large emerging financial market such as India are facing, it is important to determine whether or not the post-issue excess return hypothesis applies to the Indian stock market.

In order to confirm if post-issue excess returns hypothesis applies to the Indian stock market, this research proposes following hypothesis: The Arithmetic Mean of the Risk-Adjusted Excess Returns for new equity issues during their initial days of trading is Positive.

In finance, risk is the chance that the return achieved on an investment will be different from that expected. For this study, the standard deviation is considered as measure of risk.

To test this hypothesis we analyze all the new equity/REIT issues between 2010 and 2016 in the Bombay Stock Exchange (BSE). The average market return is equal to the arithmetic mean of the returns of the S&P BSE SENSEX index for the corresponding tested timeframe. The sample standard deviations (s) is calculated according to the corresponding time frames. The test is replicated in several different timeframes and is labeled as : 1 day (1D); 2 days (2D); 7 days (1W); 30 days (1M); 180 days (6M); 1 year (1Y). These timeframes are the typical short term investment horizons for speculative investments.

The sample from the returns of the benchmark index, suggests that the overall risk/return relationship is higher as the timeframe increases. In contrast, the sample taken from the post-issue returns shows an inverse pattern; the risk/return relation decays as the timeframe increases.
Responsible Tourism Higher Education: The Case Of EMTM
Tanja Mihalič, Ph.D., University of Ljubljana, Slovenia

ABSTRACT

This paper main purpose is to present values based education and learning in a case of a real study master programme. It is based on the concept of Tourism Educational Future Initiatives (TEFI) that proposes the values of knowledge, stewardship, mutuality, professionalism, and ethics (Sheldon et.al, 2008) to become a part of tourism education. Paper present how the students of an international joint master programme EMTM (European Master in Tourism Management) perceive these values and what benefit they see for future employment in tourism industry. It acknowledges the contemporary changes and trends in modern society, which are captured by the concepts of sustainability, responsibility, ethics etc.; and implement these values in teaching and learning in tourism higher education.
Saudi Students Experiences Of Service – Learning In U.S. Universities: 
A Phenomenological Study

Hanan Al-Thobaiti, Southwestern College
Dr. Sheryl Erickson, Southwestern College
Sultan Al-Thobaiti, Wichita State University

Keywords: Saudi International Students, Service-Learning, International Student

INTRODUCTION

The number of international student studying in the United States has increased exponentially compared to other educationally developed countries such as the UK and Australia. In the 2014/2015 academic year, the number of international students in higher education institutions in the U.S. reached its climax at high of 974,926 foreign students. It represented approximately a 56% increase from the number of international students studying in the U.S. in the previous decade. The countries sending the most students were China, India, South Korea, and Saudi Arabia, representing nearly 58% of all international students in the United States (Institute of International Education, 2015).

The increase of international students in U.S. colleges and universities has had affirmative effects on American economics and societies. The foreign students and their dependents are a key factor in promoting economic development in the United State (McFadden, Maahs-Fladung, & Mallett, 2012). As consumers, they increase revenue to the U.S. and contribute to the financial health of the academic institutions they attend. For instance, in 2010-2011 academic year, The Association of International Educators estimated that guest students spent approximately $20.2 billion to the U.S. (NAFSA, 2012). Moreover, they are deemed to be important promoters of social development. International students also create a global community by their very presence on campus and add to the ethnic diversity of the area where these universities are located. Cross-cultural activities and relationships are more whether for international and domestic students. Foreign students become a primary source of a good will for the U.S. when they return to their home country. The intellectual and innovative contributions made by international students are also felt in the U.S. research and development in science and technology (Leong, 2015; Paul et al., 2015).

It is not surprising that international students decide to pursue their post-secondary educational journeys far from their families and in an unfamiliar place which uses a different language. The core motivation factor is related to the notion that societies in the U.S. are distinguished by the ethnic and cultural diversity that encourages and invites international students (Kretovics, 2011). Furthermore, a set of features attract oversees students to studying in the U.S. For instance, many factors pushing international students to study in the U.S. are related to quality of education, opportunities to conduct research in their interested fields, employability, and the funding opportunities available to them particularly at the graduate level (Hazzen & Albers, 2006).

However, international students from non-Western countries face a variety of obstacles and challenges negatively influencing their academic goals. Faid-Douglas conducted study to define success factors of international students. She found that international students struggled with culture shock, language proficiency, stress, time management, teaching philosophy, family responsibility, relationships with professors and American peers, money and discrimination (Faid-Douglas, 2000). Students from Saudi Arabia particularly encounter additional variables related to nature of their lifestyle and customs in the U.S. relevant to religious practices, negative stereotyping, and misunderstanding of their culture identity. Saudi Students, furthermore, encounter various academic difficulties in their overseas study related to their cultural values in the degree of adaption with sex combination into school environments (P. H. Miller, 2011). Saudis cultural beliefs can be addressed through the participating in multi-cultures.
events Saudi students obtain their needs within effective integrating in American communities that might reflect upon their life experience, academic achievement, improve the satisfaction level in the host institutions (Akanwa, 2015; Leong, 2015; Razek & Coyner, 2013).

Problem Statement

International students have some concerns about achieving their educational goals or learning to function in a new cultural setting, which often leads to an increase in their anxiety (Poyrazli, 2015). In addition, the limitation of full language fluency undermines students’ abilities to communicate with local residents and non-nation peers. Occasionally, this leads to misunderstandings and miscommunication, as well as the inability to form friendships (Leong, 2015). Colleges and universities in the U.S. are assumed to possess a high level and quality of support services for equipping international students in overcoming academic and social needs issues. Local residents are expected to provide emotional and social support in order to facilitate international students’ acclimatization and adjustment (Akanwa, 2015; Ramsay, Jones, & Barker, 2007). Lovett and Chi referred to the importance of international students participating in service learning within community activities. Service learning empowers international students to grow and develop personally as well as learn how to fulfill community needs through active learning. Involving international students in social activities is a necessary support from members of the host community and local institutions if they wish to help international students to be more successful (Gresham & Clayton, 2011).

The Purpose of the Study and Research Questions

Saudi students often encounter multiple challenges while studying in American higher education institutions. Saudi students need engagement in activities that integrate them into the existing campus culture and facilitate a connection rope with non-national students and domestic students to overcome barriers.

Saudi Arabian students have unique circumstances that distinguish them from other international students while studying in U.S. universities. Saudi students encounter challenges relating to religious faith, stereotyping, and misunderstanding related to their customs and traditions (Razek & Coyner, 2013). Saudi students, furthermore, face difficulties in their academic study, which are represented in the form of language barriers and study methods. The limitation of supportive programs, in general, can make differential among creativity of Saudi students. These circumstances may reflect on their academic achievement and satisfaction levels in the host institutions (Akanwa, 2015; Leong, 2015)

Immersing and combining non-western culture students in co-curricular activities often reflect positively on students’ characteristics and academic outcomes on campus. The effective participations and involvements from these students in service learning activities would increase their social responsibilities (Astin & Astin, 2000). In this proposed, I will describe service-learning as a mean of, both formal and informal, learning in a community, organized by academic institutions and utilized as a way to integrate international students within a local community. As a result, the increased engagement opportunities in service learning programs for Saudi students will not only be critical to integrating them on campus, but it will also be developing their own diverse perspectives as well as increasing their educational success (Leong, 2015).

Saudi students’ voices are rarely heard in studies about international students as there are few studies focused on Saudi Arabian students’ experiences. Therefore, this study will concentrate on understanding Saudi students’ experiences that emerge after they participate in the U.S. universities’ service learning programs. Saudi students who are involved in service learning activities at Southwestern College, Kansas, USA will offer detailed descriptions of their experiences. They will also describe how their service learning experiences reflected on their academic performance and personal growth. A better understanding of their experiences could point out the importance of participation in service learning for international students. Information learned in this study could assist international student in American higher education institutions with organizing co-curricular events promoting and engaging international students to enhance their performance and raise the level of their satisfaction. In this study, I speculate that participating in service learning activities has greater potential to help particularly Saudi students who encounter difficulties in adjusting to new academic environments. Moreover, these activities would be significant learning experiences once it employed in student reality as well as it may shape Saudi students’ personal skills. Therefore, the
current study would motivate instructors and administrators to implement service-learning components at their universities or into their courses at least. Thus, I will employ a phenomenological qualitative research methodology to gain the experiences of Saudi international students regarding the nature of service-learning in U.S. universities. The study will also explore how Saudi international students address their experiences with instated transformative learning. This study will attempt to answer these questions

1- How do Saudi students describe their personal growth after participating in the U.S. universities service-learning programs?
2- What are the Saudi student perspectives about American lifestyle after participating in the U.S. universities service-learning programs?

Theoretical Framework

In this study, I will implement Mezirow’s (1997) Transformative Learning theory to serve as the theoretical framework. Transformative Learning theory has been employed on college students’ experiences from different countries. In this study, the theory will describe the gained knowledge and the behavioral and dilemmas attitudinal changes that may occur among Saudi international students who engage in service-learning activities through their academic study in U.S. universities.

REFERENCES

Scott, R. H. r. s. e. e. a., & van Etten, E. e. v. e. e. a. (2013). Environmental and conservation volunteering as workplace integrated learning for university students. *Issues in Educational Research, 23*(2), 242-257.
Student Led Discipline: How Giving Students Control Of The Classroom Decreases Behavior Problems And Increases Student Efficacy
Charity G. Carter, Imani-Nia Consulting Group of Illinois, USA

ABSTRACT

Teachers are inundated with an increasing number of tasks each school year, making it progressively difficult to do all that is asked of them without additional support. They manage student behavior, fill out various forms, compile lesson plans and differentiate instruction. Plus, they are asked to create multidisciplinary units with other teachers and accumulate a certain number of continuing education units in order to ensure that their teaching licenses are valid. They have to keep the online grade books up-to-date so students and parents are aware of academic progress. In addition to everything else required in the workplace, they also maintain personal lives and care for themselves, their homes, and their families. They fill multiple roles, and many feel that if they could just have a little help, they would be able to help each student maximize his or her full potential.

Student Led Discipline could very well be what those teachers have been longing for. The capstone of this classroom management system is that all students assume an active role in their classrooms. There are three main components of Student Led Discipline: Classroom Environment, Classroom Setup, and Classroom Employment.

The Classroom Environment component refers to the ambiance (or mood) that is established by the teacher. When a teacher intentionally orchestrates his or her classroom so that all students realize they are valuable and unique contributors to their classroom community, the teacher can ensure that the classroom flows well and that systems are set in place to stop minor issues before they become major problems. This component focuses on the climate and culture of the classroom, but it also gives students an opportunity to understand themselves and their classmates on deep and personal levels.

The Classroom Setup component deals with the physical arrangement of the classroom. Because Student Led Discipline centers on student responsibility and leadership, it is important that the Student Led Discipline classroom is set up in a way that allows all students to have access to what they need when they need it without having to get the teacher involved. This component clearly enables students to know which areas of the classroom are off limits and which areas were especially designed with them in mind.

The Classroom Employment component goes far beyond the weekly job assignments that elementary school teachers have issued to students for decades. This component allows students to have both a choice and a voice in their employment. Additionally, every student has a role to fill that was selected by the student and based upon his or her interests, so no one is idle.

Implementing the strategies espoused in Student Led Discipline will enable teachers to devote more time to instruction as students are empowered to manage their own behavior, as well as the classroom.

Keywords: Classroom Management, Student Efficacy, Social Emotional Learning, K-12 Education
INTRODUCTION

Student Led Discipline enables teachers to make the most of their time and get the most out of their days, allowing them to become more productive than they ever thought possible. Although there are countless illustrations that demonstrate how essential Student Led Discipline is for teachers and their students, the top four are as follows: assists teachers with classroom management, ensures that teachers are able to make the most of their time, provides an antidote for frequent assessments, and helps students learn responsibility.

Classroom Management Tool

Student disruptions serve as a one of the top reasons most teachers simply are not able to do their job to the fullest. At times disruptions are minor, such as a student arriving to class late. At other times, a student creates such chaos that the most logical course of action is to remove him or her from the classroom in order to return to a peaceful state that is conducive to learning.

All school personnel know that merely “kicking a student out of class” does very little to change the behavior. However, some teachers feel that it is the job of the administration and/or the disciplinarian to issue consequences to the student in order to curb the inappropriate behavior. Conversely, the administrators and/or dean believe that most, if not all, behavior issues are a direct result of poor classroom management, so in their eyes the burden of responsibility for dealing with such behaviors falls on the teacher.

As a result, teachers must come up with strategies and employ techniques for dealing with a range of negative behaviors that, if left unchecked, could infiltrate the entire classroom and spread as viciously as the most aggressive form of cancer. This causes them to lose instruction time because they are dealing with behavior issues rather than teaching.

Student Led Discipline provides an opportunity for teachers to let their administrative team know that there is a system in place so that when a student opts to be disruptive, it will be very clear (and easy to pinpoint) whether the student’s behavior was due to poor classroom management or something else entirely. Student Led Discipline has built-in layers of interventions that will help teachers clearly show that due diligence has been done in the classroom and that it is time for outside assistance with students who have significant behavior problems.

Time Management Tool

There are a host of tasks that steal teacher’s precious time – like distributing items to students, returning graded papers, getting materials for students who are not prepared, setting up and tearing down equipment/supplies, and impromptu parent meetings. In some instances, by the time all of the housekeeping issues are squared away there is very little time for instruction.

Student Led Discipline creates a way for teachers to make better use of their time by having students take care of numerous housekeeping issues that teachers typically handle during the class session. Teachers are able to buy back time when their students take care of smaller, non-instructional tasks.

Antidote for the Assessment Obsession

Thirty years ago, life as an elementary teacher was simple. For the most part, teachers were in charge of their own assessment calendar. The only standardized assessments at the elementary level were the achievement tests that students took at the end of the school year. That is no longer the case.

When high-stakes testing became the determining factor for students to advance to the next grade level and/or graduate from high school, the phrase “teaching to the test” was commonly used. Teachers were so concerned with making sure their students passed those tests that nearly all of their instruction time was spent in preparation for the test.
Now a more accurate description of what goes on in numerous classrooms is “teaching between the tests.” There are beginning-of-the-year performance tasks and end-of-the-year performance tasks. There are multiple assessments designed to determine a student’s reading level. There are assessments that are taken quarterly or at least three times a year to ensure that students are making sufficient gains and academic progress. There are special assessments that are given by one district that aren’t given by other districts. And, of course, there are the state (and even national) assessments that still determine whether or not students are eligible to advance to the next grade or even graduate from high school. In some cases, those scores determine which colleges (or high schools) students are eligible to apply for, how much financial aid students are able to receive, and whether or not they will be able to apply for (or be eligible) for certain scholarships. In school districts across the United States, teachers are required to plan their lessons around the testing calendar.

Some teachers feel that their creativity has been stifled. Since they plan units of instruction to start and end between testing cycles, there are significant time constraints. Although Student Led Discipline does not directly address the obsession with assessments, it will give teachers more time to focus on delivery of instruction. By virtue of taking several small tasks off of their plates, teachers will have time to do what they were hired to do: teach.

Teaching Students Responsibility

There was a time when children worked hard and craved responsibility. They were little entrepreneurs with their own lawn care, snow removal, and dog walking businesses or lemonade stands. They wanted to help out around the house, and they also enjoyed helping out before and after school. They were busy, active young people who often had to be told to slow down.

However, a quick walk through a typical neighborhood these days, might lead one to see that a vast number of children are not actively engaged in their lives. Students today seem to prefer passive activities, like hanging out at the mall, watching television, playing video games, and spending time in front of the computer. Some children are so accustomed to being served that they seem downright offended when asked to do something for themselves. They feel that it is the job of the adults in their lives to take care of them, which absolves them of any responsibility.

Student Led Discipline gives every student the opportunity to practice becoming a responsible, productive member of an organization. Each student will have a role that can only be filled by him or her. The lessons in responsibility that students learn in the Student Led Discipline classroom will carry over into other areas of life.

CLASSROOM ENVIRONMENT – A CULTURE OF CARING

The first component of Student Led Discipline, Classroom Environment, shows teachers how to create a culture of caring so that students willingly doing precisely what needs to be done. This component sets the groundwork for all students in a given classroom to have a successful experience.

One way to establish a culture of caring is to give students the freedom to be themselves. Very few students, even high school aged students, come to their teachers knowing who they are, how they learn, and why they do the things they do. Utilizing this strategy will help students figure all of that out. Fortunately, there are a numerous tools that have been created to help people of all ages learn about themselves, and those same tools can be used by students to help them do the same. There are three important things students need to learn about themselves: their multiple intelligences, their personalities, and their temperaments.

In *Frames of Mind: The Theory of Multiple Intelligences*, Howard Gardner dispelled the belief that a person’s IQ, is the only measure of intelligence. He explained that we are all intelligent in a variety of different ways. Rather than ask “How smart are you?” Gardner’s research encourages people to ask, “How are you smart?” According to Gardner, there are eight Multiple Intelligences: verbal-linguistic, visual-spatial, logical-mathematical, bodily-kinesthetic, interpersonal, intrapersonal, musical-rhythmic, and naturalist. (Gardner 1983)

Merriam-Webster’s Collegiate Dictionary defines personality as “the complex of characteristics that distinguishes an individual … the totality of an individual’s behavioral and emotional characteristics” (Merriam-Webster, Incorporated)
One tool that will help students understand their personality is the Myers-Briggs Type Indicator. The Myers-Briggs Foundation says that the purpose of its assessment tool is to make Carl Jung’s theory of psychological types understandable and useful for all people. There are sixteen different personality types that have one characteristic from the following four sets: extraversion/introversion, sensing/intuition, thinking/feeling, and judging/perceiving. The foundation specifically states that “the goal of knowing about personality type is to understand and appreciate differences between people” (The Myers & Briggs Foundation n.d.).

Lastly, temperament is defined as “a person’s nature as it controls the way he behaves and feels and thinks” (Oxford American Dictionary n.d.). In other words, temperament is a way to explain who a person is on the emotional level. The Keirsey Temperament Sorter is a great tool to use for that. In fact, it “is relied upon as the world’s leading assessment for individuals, teams, and organizations” (Keirsey n.d.). There are four main categories that describe individuals: guardians, rationals, idealists and artisans.

The “True Colors Assessment” is another great tool for helping students learn about both their personalities and their temperaments. In short, they maintain that all humans are a “mixture” of four colors: blue, gold, green, and orange. However, everyone has a primary color and a secondary color. According to the True Colors Intl website, “True Colors ® is a model for understanding yourself and others based on your temperament.” Don Lowry, the founder of True Colors combined Hippocrates concept of four different temperaments (sanguine, choleric, phlegmatic, and melancholic) with Plato’s ideas about personality to create a color-based version of the information that virtually anyone—even young children—can understand. (True Colors Inc n.d.)

Another way to create a culture of caring is to teach students how to network. Most adults know the areas in which they excel and the areas in which they need help. For that reason, if a typical adult is working on a project and realizes that they need help in one area or another, what do they do? They network. They find a friend, coworker, or colleague who excels in their area of weakness and form a partnership. Teachers can help their students identify their strengths and the areas in which they struggle by using any number of resources. However, when the teacher allow students to post their strengths somewhere in the classroom, it gives students the opportunity to realize that they are important to their classmates. More importantly, it allows students to know precisely where to go for assistance. They learn how to network

CLASSROOM SETUP – PREPARING FOR A FLAWLESS PERFORMANCE

Since Student Led Discipline is all about giving students control of the classroom, it is very important for teachers to set up their classrooms in ways that will allow students to have access to everything they need without having to constantly come to their teachers for assistance. Teachers should not have to stop instructing students in order to hand out materials or take care of minor things that they are more than capable of attending to.

At first glance, the elements of Student Led Discipline Classroom Setup - Smooth Transitions and Physical Arrangement – may not appear to belong together, but when they work in concert with one another the classroom becomes the ideal place for students to flourish and grow.

Smooth Transitions

Expectations, rules, and procedures are three terms that are often used interchangeably in the education setting. Some teachers create a list of rules, but refer to them as expectations. Sometimes rules may even be referred to as procedures. Those three terms aren’t synonyms; expectations, rules, and procedures are three completely different concepts. When used cohesively, all three of them enable a classroom to run quite flawlessly. As far as Student Led Discipline is concerned, expectations, rules, and procedures are three sides of an equilateral triangle. All three should be posted in the classroom, so they are visible by all students.

Looking up the word “expectation” does not give an accurate definition of that term. However, the teacher definitions of expect include “to anticipate or look forward to the occurrence, to consider reasonable, due or necessary;” furthermore, the dictionary says “expect implies a high degree of certainty and usually involves the idea of preparing or envisioning.” (Merriam-Webster, Incorporated 2003) In The First Days of School, Harry and Rosemary Wong say,
An expectation is what the teacher believes will or will not happen.” They go on to discuss how teachers can have either positive expectations or negative expectations of their students (Wong 1998). The Student Led Discipline definition of expectation is the broad positive belief a teacher has that all students will behave in the manner that has been clearly outlined and communicated with them. Expectations answer the question “what do I believe or anticipate my students will do?” Expectations are not enforceable, and they are typically broad and generic: “Be Respectful. Be Responsible. Be Safe.”

Although Merriam-Webster has a vast array of definitions for the word **rule**, the definition that Student Led Discipline will use for a starting point is a “prescribed guide for conduct or action; a regulating principle” (Merriam-Webster, Incorporated 2003). The Wongs describe rules as behavior expectations and state that their function is “to prevent or encourage behavior by clearly stating student expectations” (Wong 1998). The Student Led Discipline definition of rule is “a specific behavior guideline.” In general, it is a good idea for teachers to keep their list of rules fairly short and phrased in terms of what students should do, rather than what students should not do. In other words, instead of saying, “Do not talk without permission,” one could say, “Speak after receiving permission.”

By definition, a **procedure** is “a particular way of accomplishing something or acting; a series of steps followed in a regular definite order; a traditional established way of doing things; protocol” (Merriam-Webster, Incorporated 2003). Harry and Rosemary Wong say that “a procedure is simply a method or process for how things are to be done in the classroom.” They further emphasize that procedures are not penalized; if procedures aren’t followed, things simply do not flow the way the teacher intended them to (Wong 1998). The Student Led Discipline definition for procedure is derived from the Oxford American Dictionary and is stated as “a series of actions done or appointed to be done in order to accomplish something, a way of conducting business” (Oxford American Dictionary n.d.). Procedures are determined by individual teachers. It makes the most sense to have a procedure for absolutely everything that occurs in the classroom – from turning in assignments to responding to a disruptive classmate and everything in between. A tremendously extensive list of procedures, will actually work in a teacher’s favor because students will be fully aware of how the classroom operates, and the teacher will not have to stop and continually explain things. Procedures should be taught to students, and each student should receive a list of procedures so they will never be able to say, “I didn’t know what to do.”

**Physical Arrangement**

Most teachers do not arrange their classrooms with their students in mind. Classrooms are typically arranged in a manner that is pleasing to the teacher. Some teachers prefer rows of desks while others like table groups. Sometimes student safety is taken into consideration, so that electronic cords aren’t in areas where students can trip over them and injure themselves. Students typically do not have a great deal of influence in terms of how their classroom is arranged. By contrast, the teacher who implements the Classroom Setup component of Student Led Discipline arranges the classroom in a way that allows students to navigate the room successfully, to stay on task, and to consistently have what they need to do their work with hardly any promptings or intervention from the teacher. This element of Classroom Setup is comprised of three different parts: Self-Service Areas for Students, Interactive Bulletin Boards, and Student-Influenced Seating Arrangements.

**Self-Service Areas For Students**

Self-Service Areas are locations in the classroom that are specifically designed with students in mind. These dedicated areas of the classroom provide a place for students to get whatever they need (from supplies and materials to missing assignments and pretty much everything in between they need) when they need it. Providing Self-Service Areas for students not only gives them a measure of freedom, but those also give teachers the freedom to teach while significantly reducing the number of times they have to stop teaching in order to help students meet their needs.

**Interactive Bulletin Boards**

In James Mervilde’s 1981 report, titled “Student Absenteeism: Causes, Effects, and Possible Solutions,” he found that there was a myriad of factors that contributed to student absences, including school organizational factors. He also found that the programs that were most successful in reducing student absences were those that involved home visits
and phone calls to parents, along with those that restructured their absence policy (Mervilde 1981). Although the report is a bit outdated, but what Mervilde said over thirty years ago still rings true today.

When students return to class, even after being absent one day, it is really hard for them to get caught up. Students do not always check in with the teacher upon returning to school after an absence. Maybe they feel overwhelmed about all the work they missed and are intimidated about asking for what they need to do to get caught up. It could be they think that since their absence was excused, they are also excused from any work that was assigned, so they do not bother to ask. It is possible that they just do not care about making up the missing work because they know that they will have a hard enough time simply keeping up in class without factoring missing work into the equation. Perhaps they think it is the teacher’s responsibility to give them their missing work. So if the teacher does not give them anything, they figure that they are exempt from the assignment. There are tons of reasons why students fail to make up missing work, but perhaps the main reason is that they simply may not know how to get their missing assignments. The Classroom Setup component of Student Led Discipline has a simple solution for that: an Interactive Bulletin Board, which serves as one-stop shopping for students with missing assignments. This can be a physical bulletin board or a digital version.

Student-Influenced Seating Arrangements

Regardless of students’ ages, content area, or geographical location, allowing them to create their own seating arrangement really works. It does not matter if they are first-grade students or eighth-grade students. It works in elementary classrooms as well as middle school classrooms and in the physical education setting. From rural Kansas to suburban Texas to inner-city Chicago, students across the board rise to the challenge of responsibly deciding on the seating arrangement for the class. They feel empowered. They are given a responsibility and they do want to let their teacher down.

CLASSROOM EMPLOYMENT – MUCH MORE THAN “WEEKLY JOBS”

Classroom Employment isn’t just a new term to describe the weekly jobs that have been done by students in classrooms for generations; they are actually two quite different things. In fact, the differences between weekly jobs and the Classroom Employment component of Student Led Discipline are similar to the differences between jobs and careers in the real, adult world. Most jobs are short-term and do not usually do not require a great deal of education or training. When working at jobs, people do what they are told—sometimes doing the bare minimum because they typically do not really care. Weekly classroom jobs in the classroom can be described in similar fashion. Most classroom jobs are short-term; students typically have a job for one week—two if one of the weeks includes a couple of days off school. When working their weekly jobs, students simply do whatever they have been assigned—some might even do the bare minimum because they do not really care about what they are doing.

Careers are totally different than jobs because careers have the potential to last a lifetime. Careers, which are established on goals, dreams, and ambitions, are chosen by people who know they’re strengths. People with careers have a vested interest in everything they do because they see the big picture and how smaller projects have the potential to help them learn the skills they will need to succeed in their current position and to proceed to the next level. Classroom Employment is meant to last as long as a student is in a particular classroom—whether it is the school year, a quarter or a semester. Classroom Employment positions are chosen by students who know they’re strengths; they choose their Classroom Employment based on their interests or passions. Students who participate in the Classroom Employment component of Student Led Discipline have a vested interest in everything they do because they see the big picture of how everyone in their class working together paves the way for them to maximize their learning.

PRACTICAL APPLICATIONS

Before implementing any aspects or elements of any of the components of Student Led Discipline, it is very important for teachers to make a decision and make a commitment. Teachers need to decide which components will be implemented, but more than anything, they must make a commitment to Student Led Discipline. This classroom management system isn’t something to be implemented on a trial basis. If a teacher’s mind set is “I’m going to try out a portion of one of these components, and if it works, I’ll go ahead and implement a little bit more.” That’s a sure fire
way to have an unsuccessful and frustrating experience with Student Led Discipline. The students won’t buy in. Since the classroom management system can be personalized to meet the needs of individual teachers, they have the freedom to set things up in a way that works best for them and their students. Two teachers at the same school do not agree with the way the other teacher does things, that shouldn’t influence them to change what they’ve established. What works for one teacher may not work for another teacher. There are a number of questions teachers can ask themselves to help determine which component should be their starting point.

REFERENCES

*Oxford American Dictionary*.
Increasing Social Skills: 
Autistic Learners Interact With Robots

Carol M. Shepherd, Ed.D, National University, USA
Madelon Alpert, Ph.D., National University, USA

ABSTRACT

Learners with autism syndrome have shown significant positive interactions when dealing with robots rather than human beings. Robotic intervention has led to greater responsiveness of the students and increased retention of their learning. Recent information regarding students with autism not only enables students to learn the content in a variety of formats, but also helps to prepare them to have fruitful, productive lives after their schooling and for the rest of their days. It is important to empower students to become active, involved learners, and provide them with the incentives to achieve academic success. Probogotchi, a novel entertainment device, has been designed to enable youngsters with ASD (autism spectrum disorder) to interact productively with their typically developing sibling(s). Research conducted on neural cognition and information processing has led to a greater understanding of how those with ASD interact with others, and provides a path for the development of methods to assist them in their learning and development of appropriate behaviors. Technology has been evolving so quickly that new devices and methods to make subject matter available to all students is constantly being designed and implemented. This is a work in progress, and future renditions will include not only anecdotes dealing with youngsters with autism, but also new research on the use of assistive technology with those diagnosed with autism spectrum disorder, deafness, and those who are severely mentally challenged with down’s syndrome, as well as other disorders.

Keywords: Autism; Assistive Technology; Robots

INTRODUCTION

In recent years, there has been much interest in and research about the use of robots and technology in the socialization and education of people with autism spectrum disorder (ASD). Autistic children appear to develop normally at first, but then become isolated and avoid social interaction. Even as infants, they are frequently unresponsive, and focus on a single item for long periods of time. They do not establish eye contact with others, and do not respond when their name is called (US company, 2015).

Learners with this disorder have impaired reciprocal social interaction, particularly in processing emotional information (Ueyama, 2015). In a longitudinal study conducted by Robins, Dautenhahn, Te Boekhorst, and Billard (2005), a robot was presented to four children with autism over a period of several months. The results of the study indicated there was a need for additional long-term studies to determine the full potential of the use of robots in the socialization and education of children with autism. This exposure to robots and treatment of those with ASD is referred to as robot therapy. The hypothesis was supported, and results indicated that repeated exposure to a small, human-like robot would increase basic social skills in children with autism (Robins, et al, 2005). Since this study, a number of other studies have been conducted which support the theory that those with ASD may benefit considerably from interaction with robots. In addition to increased responsiveness of the children, there is evidence of research with robots that supports the youngsters’ greater retention of knowledge as well. Impaired reciprocal social interaction is one of the core features of ASD, particularly in processing emotional information. Using robot assisted therapy has proved helpful in working with autistic children, who are inclined to work well with human looking robots that may seem weird or scary to individuals not having ASD ((Ueyama, 2015). These robots look like deformed humans, yet youngsters with autism appear to feel comfortable with them. Ueyama concluded such robots could have a positive effect on improving social interactions in ASD.
Background

Autism is defined by certain diagnostic criteria, as specified in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), produced by the American Psychiatric Association, 1994. All individuals with autism exhibit certain impairments (Dautenhahn, 2003). These impairments are in social interaction, communication, and repetitive and stereotyped patterns of behavior. Socially, those with ASD have difficulty relating to others, exhibit inappropriate social behavior, and are limited in their ability to comprehend the feelings or mental states of others. They have difficulty with both verbal and non-verbal communication with others, not understanding facial expressions, gestures, or tone of voice. They are often fixated to routine and stable environments or rituals, exhibit repetitive motor mannerism, and focus on specific parts of objects (Dautenhahn, 2003, Touzet, 2015).

Individuals with autism spectrum disorder exhibit deficits in the visual processing of faces. This may be attributed to atypical brain function and organization (Jung, Strother, Feil-Seifer, & Huntsler, 2016). They process robot faces as objects instead of faces, and have greater social interest for objects than for faces. Those with ASD often have superior object processing, and faster responses to objects than faces. Thus, they process robot faces differently than human faces (Jung, et al., (2016).

Those with autism have difficulty understanding the social world. Seventy-five per cent of the cases are combined with learning difficulties as well. Autism is not a choice, made by people who wish to withdraw from the world; it is a legitimate condition. Approximately 1 in 68 American children are affected by this disorder. It has increased tenfold in the United States in the last 40 years (US company). Computer and virtual environment technology proved successful in dealing with people with ASD, enabling the individuals to deal with a safe and predictable environment (Dautenhahn, 2003). Probogotch, a novel edutainment device which is a way to play an educational computer game, has been designed to promote productive interaction between a youngster with ASD and the typically developed sibling(s) (Simut, Van de Perre, Costescu, Saldien, Vanderfaeillie, David, & Vanderborght, 2016). Social robots have been successfully used as a therapeutic tool to interact with autistic children, teaching the children appropriate social activities.

Recent research dealing with the Theory of neural Cognition (TnC) has led to an understanding of how the brain represents information. This affects cognitive abilities and brain diseases, such as autism. Recognizing the cortical column as the key cognitive unit rather than the neuron, it is possible to create a human-like robot with cognitive abilities. This “smart” robot would take several years of supervision and training to mimic child-level cognition, and several more to exhibit teenager cognition and eventually adult behavior. The robot brain would only act according to its experienced situations, just as would the brain of a human (Touzet, 2015). At present, robots exist that can mimic human capacities, but their computational power is limited. Additional power could be provided by Intel Pentium 4 microprocessors, connected to the robot with WI-FI (Touzet, 2015).

Robot Therapy

Robot therapy has been used to improve the abilities and mental health of children with autism. Studies conducted in several parts of the world have yielded results indicating children responded positively in their communication skills while interacting with robots. Such interaction proved more effective than interaction with human therapists. Parents also noticed that the children exposed to robot therapy exhibited improved behavior at home (Robot therapy, 2013). In a study of 24 children ages 4 to 12 with high functioning ASD, conducted by Kim, Berkovits, Bernier, Leyzberg, Shic, Paul, and Scassellati (2013), researchers found that a social robot was more effective in eliciting verbalization than an adult human and even an asocial interaction partner, a computer or computer game. Children communicated with the adult interaction partner as much as to the robot. These findings indicate that robots may be used to facilitate communication and social reinforcement with an adult or another child.

All humans begin their lives with sounds and gestures, the precursors of speech and sign language. The National Instructional Materials Accessibility Standard (NIMAS), approved by the US Department of Education, has enabled accessible digital versions of curricula materials that can be made into digital versions of the necessary formats for students with disabilities and distributed in the classroom (Rose & Strangman, 2007). In addition, automated, adaptive systems are being designed for customizing content to the individual learners to accommodate their unique
preferences, styles, and needs. These assistive technologies utilize text-to-speech and voice recognition software, as well as alternative keyboards and universal access stations to support exceptional learners as well as their teachers and caregivers (Kingsley, 2007).

Researchers have found that technological devices, such as iPads and computers, have been used effectively in working with autistic children, who generally exhibit social deficits and repetitive behavior. More recently, robots have been shown to be powerful technological devices when used to engage an autistic child in conversation. The primary goal of using robot therapy has been to utilize the technology to promote appropriate social behavior. Generally, six sessions are needed to show significant results (Robot therapy, 2013). However, robot therapy does not show improvement for every patient (Kim, et al, 2013). Researchers have found that the most effective treatment for autistic behavior has been a combination of both robot therapy and physical therapy with humans. Eventually, social robots may be developed with automatic perception of their interaction partners’ behavior, and exhibit appropriate interactions with those behaviors (Kim, et al, 2013). Erwin, the Friendly Robot, has been used to help scientists develop and understand the relationships between humans and robots. This can be helpful in determining how relationships are formed by youngsters with autism, Asperger syndrome, or attachment disorder (Anonymous, 2014).

In a study conducted by Cook, Swapp, Pan, Bianchi-Berthouze and Blakemore (2014), the researchers found that study participants with ASD showed no difference in response to treatment with robots as compared to humans; they responded virtually the same when observing actions with real humans, virtual humans, or virtual robot movements. The researchers state this exhibited atypical interference effects in those with ASD. Participants who did not have ASD exhibited typical interference effects when observing actions by a human form as compared to actions by a robot.

Consolidating visual and audio content into one device, such as an iPad to tablet PC, can eliminate the juggling act that many autistic students experience during a class or meeting. Using a transparent video and overlaid digital ink can reduce the visual distance between the student and the interpreter and the student’s notes. Ideally, a student could have a tablet showing the instructor, the presentation, and the interpretation all on one screen (Cavender, 2007). This synchronous involvement in the activity helps to eliminate some of the feelings of isolation often experienced by autistic learners.

At a young age, inclusive programs are being designed for typically and atypically developing young children utilizing assistive technology along with instructional technology that supports the development of critical early skills in these students (Parette, Hourcade, Dinelli, & Boeckmann, 2009). Game programs, along with robots, are used in the training of children with autism (Barakova & Lourens, 2010). Autistic children have atypical emotional and social development. In a study conducted by Barakova and Lourens, the Laban movement analysis (LMA) was used with autistic learners to measure the internal feelings and intentions that determine the patterning of movement throughout the body. The researchers developed a framework to measure the expressing and interpreting of emotional body and facial movements. They then developed games to incorporate emotional robot behaviors to be used for training autistic children. The use of the Laban movement analysis allows for realistic interpretation of human actions and reactions. Thus, positive interactive behaviors between robots and children can be exhibited.

With the rapid development of communication technology, the preferred spare time activity for children of all ages has become computer games. This technology, including both computer applications and robots, has been found to improve interaction with children having impaired social skills. Probogotchi is an innovative way to play an educational computer game. The user interacts with a stuffed image of a virtual character that is equipped with sensors. Thus, the actions of the robot depend on the user.

Probogotchi games create a dependency on the user’s interactions with the virtual character. This then creates a positive interaction between the user and the computer. In a study conducted by Simut, Van de Perre, Costescu, Saldien, Vanderfaellie, David, and Vanderborght (2016), Probogotchi can be used as a therapeutical bridge for stimulating interaction between a youngster with ASD and a normal developing sibling.

Robokind, a US robotics company, designed a humanoid robot called Milo, designed to communicate with autistic children. The robot is capable of verbal communication and has 32 different facial expressions (US company, 2015). The robot also plays music and videos to the youngsters. It can provide data to help monitor and adjust the therapy.
Reinforcing the results of previous studies, the designers stated that children who first interacted with Milo became more engaged and responsive with humans. Being more engaged leads to learning better for the youngsters with autism.

Maja Mataric, a neuroscientist and computer scientist at the University of Southern California, creates robots that are capable of assisting children with autism. She is part of a group designing a robot for diagnostic use in determining children with autism-like symptoms. Children would be exposed to this robot in pediatric waiting rooms and would be able to play with it (Hoffman, 2012). Mataric feels such interaction would encourage some children with autism to be more verbally communicative and empathic towards others.

Lee and Hyun (2014) conducted a study in Korea with four autism/mental retardation children between four and five years of age, over eight sessions. The researchers’ focus was on goals for children with speech-language disorder. Four certified speech-language therapists worked with the children. Working with robots, the youngsters learned to initiate conversations using emotional exchange expressions. The researcher recommend the future development of speech-language robots to be used to assist human therapists.

Most autistic children lack a normal breathing pattern, particularly in the volume of their breath. Mimicking the robot, children have a good model to improve their breathing, which will affect their ability to speak effectively (Lee & Hyun, 2014). The robots used in the study had specific scripts, such as a birthday celebration script. The researchers imagine additional scripts to assist autistic children in everyday life, such as a hospital play, market or shopping play, or school play. Humans use specific, complicated language cues, and disabled children find it difficult to interpret these cues and interact with people. Using a robot with special education media, presented as a friend, can have a significant effect on improving the speech of such youngsters.

A concern with using robots for therapy with autistic individuals is the high cost presently associated with the design and production of these robots. Wu, Larkin, Potnuru and Tadesse (2015) designed a modular, child-size 3D printed humanoid robot that could be relatively inexpensively produced using 3D printing. The mechanical design of this humanoid has the functionality of the robot and the anatomically correct dimensions of a child. The movement of the joints enables the robot to actively perform a number of children’s games, which can be technologically programmed for interaction with children. The 3D printing time took 300 hours, with a material cost of $10,000.00.

**DISCUSSION**

For the past decade and longer there has been much activity and research involving the use of technology in education. This is especially true for diverse learners, who have difficulty learning with the traditional pedagogies used in teaching. Learners with autism syndrome have shown significant positive interactions when dealing with robots rather than human beings. Although research indicates that the most effective treatment of individuals with ASD is with the use of both robots and human therapists, the more recent developments of robotic technology have incorporated diagnostic tools as well as adaptive tools, so that a robot can not only help to diagnose those with autistic symptoms, but also interact with them in a realistic human manner, helping the patients to learn appropriate social skills as well as content matter.

Educators have the responsibility to raise social consciousness by providing appropriate social discourse strategies (Smith, 2006). In a quasi-separate-but-equal environment, deaf students are often educated in schools for the deaf or in separate special education classes in the schools. When in an inclusion class, they sit next to students with whom they communicate minimally (Smith, 2006). Vividness is created when the brain reacts to senses stimulated during learning. This is positive responsiveness. The more senses used in a learning experience, and the intensity of those senses, the greater the student’s retention of learning. Visual environments can mentally stimulate symbolic emotional and intellectual scenarios that create responses in the learner and create deeper learning experiences (Atkinson, 2009). Within conventional educational contexts, the use of advanced technological tools and virtual environments can support student learning and the achievement of goals. Utilization of this concept significantly enhances the learning process (Jones, 2008).
With the rapidly increasing number of diagnosed cases of autism, it is important to conduct further research in the field of robotics and technology, to assist individuals with special needs in becoming socialized and enabling them to lead productive lives. Today’s learners will continue to be exposed to new and innovative learning technologies. As more schools offer such technology, and as technological development accelerates, the cost will decrease and the ability to accumulate and store data will increase. This will ultimately raise expectations for problem solving and new research (Jackson, Gaudet, McDaniel, & Brammer, 2009). As researchers, the authors of this paper seek to add to the body of knowledge based on scientifically controlled investigations and studies, and then proceed to analyze and interpret the data in an attempt to draw relevant conclusions.

REFERENCES


Influencing Academic Resilience And Self-Regulation Skills In Students: What Is The Impact On Actual Results?

Alex Krzensk, Anglican Church Grammar School and University of Oulu, Finland

ABSTRACT

Research has found that an individual's level of resilience and ability to self-regulate is strongly correlated with their academic success; however, the development of these skill-sets has generally been considered as innate rather than acquired. Unfortunately, in a modern high school setting, the ongoing development of these skills is continually competing for time with subject matter and it has become evident that the increased amount of curriculum time is not having the equivalent levels of impact on learning outcomes. Conversely, treating student self-regulation and academic resilience as a trainable skill-set and providing regular and contextual opportunities to refine these skills has been found to positively influence student learning outcomes. The extent to which, however, requires further investigation.

Effective differentiation and individualisation is a core goal of quality education. In response, the development of quality digital learning tools over the same duration has exploded, reaching the point now where essentially anything can be learned online. Thus, education is currently in the midst of digital transformation. However, while this may be the case, uptake and usage are still quite poor and there is evidence suggesting that education lags significantly behind other industries in terms of technological usage. The underpinning issue stems from student ability, relative to their use of resources and to manage distractions, to self-regulate effectively. Ultimately, successful student learning is limited only by their drive and their aptitude to effectively use the resources that are available to them.

This study proactively exposes and develops student ability to recruit and use the skills of self-regulation and resilience by dedicating regular class time in Mathematics, to the individual addressing of misconceptions. Students will also be explicitly trained to use technology to assist them when addressing their misconceptions as these will support the development of student self-regulation. The study will analyse quantitative student results from termly Mathematics exams, 4 terms per year, with the goal of assessing if the ongoing development of self-regulation and resilience skills has a significant effect on academic outcomes over time.

Results to date have found there is a significant difference between the control and the program years both in terms of inter-term and intra-term comparison. This significance has been found to be correlated with a positive shift of improving results in cohorts who have been part of the program. In addition, evidence of sustained modification to teaching practice and upskilling has also been observed.

RATIONALE

Extensive research has identified that student skills in the context of both self-regulation and resilience are critical indicators of student success. The skillset and/or development of self-regulation and resilience are not effectively utilised in most teaching. Furthermore, when these skills are actually addressed, it is generally done so in isolation and/or not in a consistent manner. In most instances, self-regulation and resilience give way for content delivery. Consequently, students are expected to become increasingly effective, resilient self-regulators as they progress through school and mature, without any explicit development or contextual support.

This project aims to draw together the aforementioned research foci and tie them together in a program that is accessible and easy to implement for schools and frontline teachers; thus focusing on bringing the research into the
mainstream. Specifically, the program explicitly brings together contextual self-regulation, academic resilience and, effective usage of technology in the Mathematics classroom. Furthermore, the project will measure the influence of the program by analysing the results of the respective Maths exams over the course of a school year. This quantitative focus will provide critical evidence to inform teachers and administrations alike that the development of these skills will have a significant impact on student outcomes.

OBJECTIVES AND EXPECTED RESULTS

The objective of this study is to measure the influence on Mathematics attainment that the regular deployment of resilience and self-regulation opportunities provides. In addition, the study will measure the change in student self-regulation skills. This ‘influence’ is defined as the change of the spread of exam scores in two criteria, Knowledge and Problem solving, over the course of 4 exams.

From a theoretical perspective, self-regulation has been identified to be essential to the learning process and, the effectiveness of which, a critical indicator of long-term individual success (Jarvela & Jarvenoja, 2011; Zimmerman, 1990). In addition, research has found that the concept of resilience also underpins the success of an individual. In essence, this is the ability to not only manage oneself effectively but also the ability to extract learning opportunities from negative results, failures, misconceptions and mistakes (Dwyer, 2012; Duckworth, 2014).

Building upon these concepts, student ability to seek formative feedback and self-assess is a critical skillset that both indicates effective self-regulation and, provides students with a pathway through their learning problems (Sagor, 1996; Yaeger 2012). Hence, it is unsurprising that some of the biggest influences on academic outcomes are self-reporting and formative feedback (Hattie, 2009).

Again building upon the aforementioned, technology and digital learning tools now have the unprecedented capacity to, in addition to providing limitless content, provide highly individualised formative feedback in real time. In essence, student learning is limited only by their drive and aptitude to utilise the resources available to them; their ability to self-regulate and be resilience as they self-assess and seek feedback (Greenhow, 2009; Galla, 2015; Collins, 2009; Yeager, 2012).

In the context of methodology, the strategies used will be a combination of an intervention study for the student body and an educational action research strategy for the teachers involved. Neither strategy, however, will be adhered to in a pure sense (Adelman, 1993).

Firstly, the intervention strategy is proactive rather than reactive, systematically tying together elements of resilience, self-regulation and technology and doing so in a consistent manner.

Secondly, the action research will be informed and modified by the teachers involved but be very much guided down the lines of the overarching goal. The majority of the teachers on the program are of course aware of resilience, self-regulation and technology usage, but don’t necessarily prioritise the development of these skills. Moreover, the effective usage of the technology in their teaching is varied, to say the least. With this in mind, the action research strategy provides buy in from the teachers, as their input in valued and influences the program, without producing a program/style of teaching that dismisses their teaching not matter how extensive of limited. Essentially, this approach sidesteps the resistance of teachers who perceive its institution as a threat to their own teaching and/or teaching competence.

Finally, the data analysis of the influence of this program will be a quantitative approach as opposed to the normal qualitative approach associated with educational action research. This approach is being used to provide additional validity of the program as a genuine influence on student outcomes. As such, exams will be used as the independent measures and be analysed both intra-term, looking at internal improvements over time, and inter-term, compared to earlier stages of the intervention and pre-intervention as the control.
HYPOTHESIS

Given that all the elements utilised in the program are known to have a positive effect on learning outcomes, it is hypothesised that the program will have, predictably, a positive impact on learning outcomes. The magnitude of the impact, however, particularly on differing student demographics is unknown. In addition, it is also hypothesised that, as the program is refined, the measurable impact will increase after each iteration of the program.

EXPECTED RESULTS

It is expected, in accordance with previous research, that there will be a positive influence on student learning outcomes. More specifically, the value-add will increase over time as students improve at self-regulating, being resilient and using technology to assist with learning.

In addition, the value-add will be higher for students who start in the first and second quartiles and decrease for students in the third and fourth quartile. The basis for this assumption is due to the fact that, in the majority of cases, these students are not struggling due to verifiable cognitive issues but rather a distinct lack of strategies to self-report and assess their own level of understanding.

The anticipated smaller shift of students in the third and fourth quartile is due to the fact that they are already capable of utilising skills of self-regulation and can do so with resilience as required. It must be noted that this is a generalisation and there will still be value for the high-end students, particularly those who have a high ability but don’t necessarily have the resilience to deal with not being able to immediately see the applicable strategy (Sagor, 1996; Yeager, 2012).

Consequently, the data is expected to show some positive shifts from Term 1 to Term 4 intra-year and also show a significant difference between the program interventions years, Stage 1, 2015; Stage 2, 2016, and the control year of 2014. What isn’t certain is how much influence will be attained and if there is a maximum amount of influence. This could be dependent on the content type, ie more abstract, and point of maturation.

Finally, the qualitative measure of self-regulation rating recorded triannually will be used to qualitatively assess the level of student self-regulation, comparing levels pre-program, mid-program and post program; at the end of the school year. Normal maturation over the course of Year 7 will be taken into account.

RESEARCH METHODS AND MATERIALS

Each stage of the study incorporates the Year 7 cohort, Stage 1 started in 2015, consisting of 200-230 boys who are 11 – 13 year-olds. These students are spread across 10 maths classes with an average size of 23.

PRELIMINARY INTRODUCTION

Students are introduced to the concepts of resilience and self-regulation via a presentation and discussion conducted by class teachers.

CORE PROGRAM

One lesson per cycle (approximately fortnightly) Students are given the opportunity to identify skill specific misconceptions utilising their preference of a variety resources, predominately digital.

Once misconceptions are identified, students are encouraged to target them using any or all of the tools provided, i.e. whiteboards, writeable surfaces, books, tablets, online resources etc.

Students are required to report on the weakness identified and their subsequent progress/improvement at some stage during the lesson. Students are also required to document and maintain a record of work completed and their results as they progress.
Teachers support students as they wrestle with their misconceptions as per usual and prompt students to utilise their skills in resilience and self-regulation to solve the problem. Specifically, students are encouraged to use the resources to solve the problem, seek help from peers who are working on a similar skill or, as a final resort, seek feedback from their teachers.

Teacher’s management of the class is the same as any independent practice activity

Teacher feedback to students, who require assistance, is to counter question students with phrasing along the line of:

- What are you going to do about this problem?
- How are you going to solve this problem?
- Do you have a strategy to solve this problem?

DATA COLLECTION

Quantitative Data

- Student exam results will be collated at the end of each term, 4 times over the course of the year.
  - Raw exam percentages will be the primary measurement to be analysed
  - Two of the exam criteria will be compared and analysed, Knowledge & Understanding and Problem Solving.
- Control data will be collected from the 2014 Year 7 cohort results
- Each stage represents one year's worth of data, Stage 1 started in 2015

QUALITATIVE DATA

Students will complete a self-regulation survey, at the beginning of term 1, at the end of Semester 1 and at the end of Semester 2.

Teachers will also complete a survey focusing on engagement and implementation of the program.

DATA ANALYSIS

Qualitative Data

The student self-regulation surveys provide feedback on the cohort levels of self-regulation and if there is change over the course of the year.

The teacher survey provides feedback on the level of teacher participation and implementation of the program over the year.

Quantitative Data

Given the large volume of data collected, the analysis will be broached from several angles.

PRELIMINARY ANALYSIS

1. ANalysis Of VAriance (ANOVA) to be run comparing Knowledge (KAPS) from each term within each stage looking for significant differences between each term.
2. ANOVA to be run comparing KAPS from each term against the same respective term from the control year.
3. Analysis points 1 & 2 to be run again with the top quartile removed from the data set to assess the Influence For The Target Demographic And For Problem-Solving, (MAPS).
MAIN ANALYSIS

The main analysis will be hierarchical linear modeling so as to provide a robust analysis given the number of variables With Potential Influence. This Data Is Currently Being Processed.

Preliminary Results and Discussion

At the close of the 2016 school year, there are two stages of data collected. Analysis in currently in progress and some preliminary results are available.

Please note that this is only a preliminary analysis. A critical aspect of this study is to establish quantitatively if the intervention is having an impact on student results in Year 7 Maths. As such, these results are indicative but not irrefutable. In essence, preliminary results indicate a positive influence, but the analysis is ongoing.

Knowledge and Procedures (KAPS) Analysis

Stage 0 KAPS analysis (2014 – Control)
The results attained by the Year 7 cohort of 2014 across the four termly assessment items were found to be statistically insignificant across all terms for Knowledge (KAPS).

Stage 1 KAPS analysis (2015)
The results attained by the Year 7 cohort of 2015 across the four termly assessment items were found to be statistically different. Further analysis found that there was a significant improvement over the course of the year.
The results attained by the Year 7 cohort of 2016 across the four termly assessment items were found to be statistically different. Further analysis found that there was a significant improvement over the course of the year.

The significant differences identified between the terms in stage 1 and stage 2 respectively are of interest due to the fact that most of the intuitive variables of influence have been found to be insignificant between the cohorts, namely that of external student data (IQ testing), assessment degree of difficulty and teacher experience/expertise. In addition, there have been necessary content adjustments that have increased the level of content delivered to the 2016 cohort.

Graphs 4-7 provides a side by side indication of termly results between the control and two stages. As expected, there is minimal statistical variation between cohorts in Term 1 but this change as the year progresses. Of particular note is the, there is a statistical difference between the students who were in quartile 1 or 2 for each stage respectively as they progressed through the year. In addition, independent analysis labeled the 2016 Term 4 assessment item as more...
difficult than either the 2014 or 2015 assessments which were both given the same degree of difficulty.

Graph 4-7: KAPS termly comparison, 2014 – 2016

Overall, the preliminary results indicate a significant difference in the KAPS results achieved in both Stage 1 and Stage 2. Given the lack of significance found between the cohorts and teaching staff, the positive influence has been tentatively attributed to the program.

PROBLEM SOLVING (MAPS) ANALYSIS

In contrast to KAPS, the variation between problem-solving (MAPS) results have been found to be significant but inconsistently, both at an inter-year and intra-year level. While there are positive trends within the data, there is simply too much variation that has not been effectively controlled at this point in time. Of note, the 2015 and 2016 Term 3 assessment was independently deemed to be significantly harder than 2014 which inversely correlated in terms of the cohort results. Also, as problem-solving assessment specifically requires interpretation of written text, there is evidence that student literacy must be considered as a significant influencing factor.
With respect to the MAPS results, no significant influence has been attributed at this stage and, given the increased number of variables involved in problem solving, it is being analysed in more depth.

**Teacher Participant Feedback and Engagement**

As previously discussed, the most influential factor for the success of the program is the teachers involved and their level of engagement. Ongoing feedback is sought from all teachers involved, both formally and informally, and this feedback has positively influence its perceived and actual value. Specifically, the feedback provided has resulted in significant adjustments to the revision cycle, resources, formative testing and reflection opportunities. In addition, teachers involved have sought out opportunities to combine classes for resilience lessons, left resilience lessons as supervision lessons when absent and generally incorporated them into their normal practice. Given the demographic of teacher experience varies from 3 – 30+ years of teaching, the level of engagement has been exceptional. While not something that can be analysed per se, this feedback does provide a valid indication that the program is being adhered to consistently.
It is worth noting that, as teachers are very much masters unto themselves in their classroom, if they didn’t value the attributes of self-regulation and resilience or see them as being a significant attribute of a learner, they would not be consistently addressed or utilised in their classrooms, regardless of mandate or directive.

CONCLUSION

The significant statistical differences as well as the positive trends identified in the study thus far, indicate validity, especially when considering the predicted results formed by the literature. When further coupled with the qualitative teacher feedback and general teacher engagement, there is an increasing body of evidence that, while not statistically significant at every juncture, indicates a positive influence being exuded over student results. In light of these positive indicators, the intervention will continue and further data shall be collected for the Year 7 cohort of 2017.

Overall, the study to date has provided supporting evidence that the explicit and contextual development of student self-regulation, resilience and digital competencies can have an increasingly positive impact on their exam results.

BIBLIOGRAPHY

(n.d.). Retrieved from Studymaths.co.uk: http://studymaths.co.uk/contact.php
Barback, J. (2013, April). Enrichment or acceleration or both? How to best provide for gifted students. New Zealand.


Training Teachers To Teach The Language Of Science
Wei Zhang, The University of Akron, USA

ABSTRACT
Disciplinary literacy develops in tandem with content knowledge, but students do not automatically acquire disciplinary literacy as they engage in content knowledge learning. This is particularly true for such disciplines as science where highly specialized language is used to communicate fundamental ideas, key concepts, and core knowledge (Fang, 2005; Shanahan, 2013; Shanahan & Shanahan, 2008). Science texts are generally considered difficult because they are “simultaneously technical, abstract, dense, and tightly knit” (Fang & Schleppegrell, 2008, p. 20). In order to make science texts more accessible to students, teachers need to know how the language of science works and design effective instructional strategies to explicitly teach it, especially to English language learners who are still learning English for daily communication. In this presentation, a science text analysis project implemented in the training of in-service science teachers in a federal grant awarded to train content teachers with a TESOL (Teaching English to Speakers of Other Languages) is introduced. Participants will engage in a step-by-step hands-on analysis of a middle school science text on the Water Cycle to learn the four features of science texts as being technical, abstract, dense, and tightly knit. They will also take part in instructional activities designed to teach the language of science and in a discussion on how to effectively implement these strategies.
The Strategies For Flipping The Classroom To Enhance Student Engagement In Higher Education
Jiye Choi, Korea University, South Korea
Jeonga Jang, Korea University, South Korea

ABSTRACT
Higher education is undergoing dramatic changes in the knowledge-based society of the 21st century. The traditional lecture-based method used in most Korean universities has critical limits in developing the desired talents in current society. Faced with these problems, many Korean universities are devoting significant attention and effort to changing teaching methods from lecture-based to student-centered, especially the Flipped Class.

The purpose of this study is to suggest strategies for improving the Flipped Class based on student perceptions and other information gathered from satisfaction surveys. The participants were 450 students who took 9 flipped classes in Korea University in 2015 and the questionnaire consisted of 30 items in categories such as operation condition, self-evaluation, effects, personal satisfactions and suggestions for improvement.

The study analyzed data based on the three research questions: 1) how students perceived the effectiveness of the flipped class compared to the traditional lecture, 2) which component of the flipped class effects student satisfaction, and 3) which courses are better suited for developing the flipped class. Statistically, Chi-squared test, T-test, Wilcoxon rank sum test and cumulative logit model were used. All statistical analyses were performed using SPSS WIN v. 23.0.

The findings of this study are as follows. First, the results of the survey were positive and the highest level of effectiveness was participating more actively in the flipped class compared to traditional classes. Second, the relation and organization of the contents between online and offline classes is the most important component for student satisfaction. Third, there is no special subject best suited for a successful flipped class but the lecturer is a very significant factor.

Finally, some suggestions for the advancement of developing and implementing of the flipped class for students in Korea were provided.

Keywords: Flipped Class, Flipped Learning, Student-Centered
Memory In Plato, Cicero, Quintilian, Longinus, And Augustine
Khaled Almohawis, Southern Illinois University, USA

The five canons of rhetoric are invention, arrangement, style, memory, and delivery. These canons have been greatly studied and analyzed by different theorists. The discussions and analyses of the canons differ according to different issues and circumstances, such as the cultural context, purpose of discourse, type of audience, etc. Although they interweave and sometimes cannot be separated from each other, each of the five canons can be studied thoroughly and individually. This paper will trace the different treatments of memory by Plato, Cicero, Quintilian, Longinus, and Augustine. Memory’s role in the discourse is very close to delivery and arrangement. It is also a supportive characteristic of both invention and style. I chose memory because I think that at the beginning of classical rhetoric studies, it was not that significant factor in speech and dialogue. However, after deep analyses and discussions of some theorists, it has become more important, and it has taken different roles. It is worth tracing how the role of memory differs in each theorist’s and rhetorician’s era. Each one of the mentioned rhetoricians and theorists discussed memory according to their particular type of discourse and way of dealing with their audience. Thus, the different roles of memory can be seen from their different viewpoints.

Plato did not introduce a separate discussion and analysis of the role of memory in rhetoric. However, in Phaedrus, Plato introduced a direct critique of writing as a vehicle of knowledge and discourse. He compared the role of memory in dialogues with its role in writing. Plato asserted that a well-organized memory in oral speech supplied an orator with confidence, and he compared this to writing, in which neither confidence nor a well-organized memory is needed. He continued to say that the role of memory in writing is to remind instead of to remember, and the transfer of knowledge comes from the writer’s letters or symbols, not from his or her internal emotions. There is a big difference between reminding and remembering. Reminding seems to bring some ideas from an external source, while remembering calls ideas from the internal mind. Thus, a well-organized memory will help increase the criticality of the ideas of oral dialogues and speeches more than in writing because writing is a kind of transfer of knowledge using non-interactive letters and symbols on paper. Memory in Plato’s view will help to polish ideas by bringing them alive on the table of discussion to be refuted or proved. The main guide of Plato’s view regarding the role of memory was that he focused on the interactive dialogue as a vehicle of the discourse.

Plato’s perception toward memory is almost the same as Cicero’s when both agreed that it is an important characteristic of the orator. Cicero discussed memory as a separate, important factor in oratory when he introduced a strategy for developing memory’s capacity. Cicero illustrated that the importance of memory is manifested in the quality of responding to opponents while arguing and refuting in real-life situations. In order to do so, Cicero introduced a strategy of improving the orator’s memory by sorting the inputs into imagined images in his or her mind. Visually imagining figures in the mind make recalling the claims and ideas in live discussions or debates more expedited and convenient. After several discussions and debates, the orator’s mind sorts new arguments and strategies of dealing with new topics. The orator can then recall these memories usefully, which will result in achieving a higher capacity for dealing with the audience and interlocutors. Cicero also asserted that people who have a good faculty of memory use the same strategy for sorting imagined images, which he called localities, in their minds. Thus, Cicero asserted that even people with weak memories can improve their memories to benefit them during their speeches or dialogues. All Cicero’s views were focusing on improving the orator’s performance, which is the main focus of his book On the Orator, by activating a well-organized memory.

Quintilian concurs with Cicero on the idea of arranging inputs using visually imagined images within the mind in order to ease remembering them. However, Quintilian added that activating the repertoires of memory through practice is very important to expedite memory’s natural responses. It is not enough to rely on arranging and embodying inputs in mental images in the mind without practice. Quintilian said that the more that activities are undertaken for the memory, the more natural improvement will be added. The result will be the quick natural response of memory in real-life situations in the same way as a naturally powerful memory. People who follow Quintilian’s idea by practicing
will be familiar with new situations because of their practical experiences. He also agrees with Cicero’s view of people who have weak memories, and that they can develop highly natural responses since they are following the same processes that are used by people who have well-organized memories. Thus, it is not impossible to invest memory’s role even if someone does not have a knack ability of powerful memory. Quintilian also introduced a clear definition of memory that helps us to understand his perception of memory: memory is the repertoire of fluency and pureness in discourse. Thus, as long as memory is trained well, the clarity and eloquence of speech will increase.

Longinus asserted that one of the ways to improve memory is to hear and listen to eminent speeches and poems. Longinus focused on imitation to some extent, so the repetition of listening is very important to be familiar with the text. It is also important to elevate the soul of the speaker, which will result in the elevation of his or her speech. The repetition here is different from the practice of memory that was described by Quintilian. While practicing reactivates different internal skills for the production of discourse, repetition is memorizing the eminent speech many times. The outcome of practice is the increased readiness to reuse the same skill in real-life situations, while repetition elevates the soul of the speaker. In addition, Longinus mentioned a new characteristic of memory, which is the ability to keep bad events in memory for a long time without a need for repetition, especially if these events were committed by a known character. This is a helpful characteristic in oratory because it supplies orators with a precautionary awareness of their and others’ errors and helps them avoid committing them again.

Augustine discussed the issue of memory in a different way because he dealt with a different discourse—the Scripture. Augustine said that memorizing the Scripture was important to increase the wisdom of speakers, which increases their eloquence and their control over their audience. It also supplies speakers with powerful repertoires of effective words. These words will increase the quality and eloquence of their speeches and will attract their audience emotionally because of their divine sound. This is almost the same as the idea of elevation introduced by Longinus. However, the idea of memorizing the Scripture can be done by following the strategies of Cicero, Quintilian, and Longinus, of embodying mental images, practicing, and repetition, respectively. Another important role of memory according to Augustine is its importance for investing the capacity of a powerful memory in those who cannot initiate discourse or speeches themselves by authorizing them to reproduce eloquent speeches using their superior delivery skills with the help of memory without tricking the audience. Some people are very capable of originating magnificent ideas, but they cannot fully deliver them to their audience. Thus, people with skillful memories will be able to deliver others’ ideas more effective than their owners.

The interpretation of memory’s role is different according to different factors and circumstances. However, almost all of the mentioned theorists and rhetoricians—Plato, Cicero, Quintilian, Longinus, and Augustine—agree on the idea that memory is a very important supportive factor that increases the quality and clarity of discourse. Nevertheless, in each new era, rhetoricians and theorists have suggested a new role for memory. Cicero hypothesized the strategy of improving memory in order to be beneficial for the orators. Quintilian suggested practicing for memory in order to support Cicero’s view. Longinus theorized a new role for memory of elevating speech through repeatedly listening to eminent speeches because he was affected by the idea of imitation. Finally, Augustine added the occupation of the audience’s emotions by memorizing and adopting words and phrases from the Scripture.

REFERENCES
The Interaction Of Relative Political Capacity And Economic Growth To Attract Foreign Direct Investments At The Provincial Level In Indonesia

Murniz Allen Vasay Coson, Ph.D., East Los Angeles College, USA

ABSTRACT

This paper will explore how provincial governments within developing countries, specifically in Indonesia, attract foreign direct investment. The paper implication is important as it could explain the inequal distribution of growth in developing countries that can lead to dual economies, whereby provincial governments compete among themselves trying to appeal to international investors.

There is consensus in the economic development literature that both economic and political variables are essential to grow a country’s economy. The ability of a country to provide a free market system by institutions that respect the rule of law makes the environment more favorable for investors, hence a country, more specifically, a provincial government needs to make that commitment to attract foreign direct investments (FDI). Further, a functioning and credible provincial government serves as an important component in strengthening a country’s economy. This political component is called political capacity, which measures a government’s ability to extract resources from its people to pursue public policy goals in hopes to create a more favorable market environment to attract foreign direct investments. Investors will feel more confident and comfortable investing their monies in these economies helping to reshape the image of these governments as credible and stable countries for investments. However, political capacity alone is not enough to explain how to attract foreign direct investments, which leads to the need of adding an economic component to this equation. Governments must also possess the necessary economic tools, such as infrastructure and economic policies along with political capacity to effectively attract foreign direct investments. Many provincial governments in developing countries lack these components, thereby jeopardizing the opportunity to develop as a regional economy and compete in the global market. Therefore, the interaction of both political capacity and economic growth is essential and a strong indicator for provincial governments to attract foreign direct investments.

The findings of this paper can serve as a policy tool for provincial governments in developing countries across the globe to effectively develop its economy and compete in the global market.
Navigating And Negotiating Dispositional Distances In An Undergraduate Environmental Program Using Business-Based Assessments To Enhance Collaboration Across Disciplinary Divides

David C. Gosselin, University of Nebraska-Lincoln, Lincoln, USA
Ronald J. Bonnstetter, TTI Success Insights, Phoenix, AZ, USA

ABSTRACT

One of the biggest challenges for education is to prepare today's students to meet the future intellectual and workforce demands that are required to address the many “wicked problems” facing society. Wicked problems are real life challenges involving complex systems that are characterized by legitimate, competing values, difficult to predict cause and effect relationships, high degrees of uncertainty, and multilevel social interactions (Rittel and Webber 1973). To address these wicked problems requires effective interdisciplinary and transdisciplinary teams composed of physical and biological scientists, social scientists, economists, policy experts, among many other disciplines. Studies of interdisciplinary and transdisciplinary teams indicate that team members struggle to achieve knowledge integration across disciplines. This type of integration across disciplines is at the heart of addressing important societal challenges including but, not limited to, impacts of climate change, conflicts between food, energy, and water production, and sustainable development. Part of the struggle with integration is recognizing that there are not only differences in conceptual understanding, but there are also differences in the dispositional characteristics of team members. A person’s disposition, most simply, is their attitude of mind. Attitude is a complex mental state involving beliefs, feelings and values (motivational drivers) that determine a person's characteristic actions and reactions (i.e. behaviors) to act in certain ways. We use the concept of dispositional distance© to describe the differences in the dispositional characteristics of team members. There are inherent dispositional distances between all people on teams. If dispositional distances are short, team members may work more effectively together. As the distance grows longer, team members will need to navigate and negotiate their differences.

Collaboration is a critical competency that today's students require to meet future workforce demands. Students need to learn how to manage dispositional differences in order to develop a shared vision which is a crucial attribute of effective collaboration. Providing opportunities for students to explicitly develop collaboration skills is an important attribute of the Environmental Studies (ES) program, University of Nebraska-Lincoln (UNL). The Environmental Studies program has partnered with TTI Success Insights® and used research-based pedagogy and a reflective action research to inform undergraduate students about collaboration and teamwork. The UNL-ES program is using a strategy from the business world to employ an assessment instrument that will help students understand themselves and adapt (i.e., navigate and negotiate) more effectively to others in the professional world.

Output from this assessment instrument provides verbal and visual models that reveals the how, why, and what of individual performance. This instrument provides important information about the student's dispositions (i.e., behavioral characteristics and motivational drivers) along with strengths weaknesses, and personal competencies. Students are provided output from these assessments and are used as the foundation for discussions related to strategies for team blending and recognizing that differences are okay and can be managed. Students learn to adapt
their behaviors to more effectively work in a team. These assessments play a positive role in the dynamics of small and large groups. The analysis of these assessment data have informed us about how to improve their use in debriefing the class. We have identified certain mixtures of behavioral styles and motivational drivers that may be problematic to group work. Many students have experienced team projects, but in addition to learning about collaboration and development of a shared-vision for a project. Education has taken the opportunity to add an important factor to the process: the science of self.
Analysis Of The Status Of K-MOOC For Sustainable Development

Jeongah Jang, Korea University, South Korea
Jiye Choi, Korea University, South Korea

The Ministry of Education of Korea is promoting K-MOOC (Korean online public lecture) project from 2015. We selected ten universities in Korea and developed and operated 27 courses in 2015. We are supporting the project with the aim of developing 100 courses by 2017. K-MOOC is a government-led higher education innovation program like FUN and J-MOOC, which is changing the paradigm of higher education in Korea.

1. Purpose of K-MOOC

- Participate in the global flow of Higher Education: strengthening capacity through training and public lectures internationally competitive education content development
- The new education system of higher education building: presentation and effective teaching model Systems bachelor's open acceptance of the new teaching and learning models
- Lifelong learning foundation: Aging / National High University of China national human resources development and retraining

2. Management of K-MOOC

The National Institute for Lifelong Education, which manages lifelong education and lifelong learning account system in Korea, manages the development and operation of K-MOOC. The institute has been conducting quality assurance and monitoring of the quality of lecture contents developed by universities, and has been working successfully with K-MOOC participating universities through the organization of practitioners' communities and regular workshops. In addition, by developing the K-MOOC platform using open edX, we provide edX's know-how and a platform that is unique to K-MOOC.

3. Results

We characteristics and characteristics of K-MOOC were derived through K-MOOC user statistics. In addition, K-MOOC has been utilized to improve the capacity of the nation's talented people, such as the acquisition of credit in the absent status of Korean soldiers and the compulsory education time of public officials.

In addition, expectation for K-MOOC as lifelong education for the second life design due to extended life span is also high. The completion rate of K-MOOC is 10%, which is higher than the average completion rate of 3% of MOOC around the world. The reason is K-MOOC's provision of Korean and English subtitles for all courses and free of charge.

4. Improvement of K-MOOC

As the MOOC has emerged, discussions have been actively made on the utilization of lecture contents developed through OER (Open Education Resources) in higher education. A lot of research and suggestions from higher education institutions are needed so that OER can be recycled and used as auxiliary teaching materials for MOOC and Flipped Class.

From the viewpoint of the university, the MOOC is very likely to be used in the education of the members of the university - new students' joint lecture (safety, human rights, codification, software, etc.), graduate school compulsory education (research ethics, etc.), statutory education for faculty(codification, human rights, ethics, etc. )- as well as fulfilling responsibility for society and contribution to lifelong education at the national level.

Keywords: K-MOOC, Higher Education, Korean MOOC, Lifelong Education, The Ministry of Education of Korea
An Update On Big Physics In Small Places
Joseph E. Finck, Central Michigan University, USA

ABSTRACT

A model for engaging undergraduates in cutting-edge experimental nuclear physics research at a national user facility is reviewed and updated. Methods to involve students and examples of their success are presented.

HISTORY

When the National Superconducting Cyclotron Laboratory (NSCL) upgraded their capabilities to the Coupled Cyclotron Facility (CCF), an FSU/MSU consortium built the Sweeper magnet to be used with two existing neutron walls to perform neutron-fragment coincidence experiments. The neutron walls were originally built for lower beam energies and had only a neutron detection efficiency of about 12% for the energies expected from the CCF (Ref. 1). During the 2000 NSCL users meeting a working group realized the opportunity to significantly enhance the efficiency with an array of more layers using plastic scintillator detectors (Ref. 1).

Several NSCL users from undergraduate schools were present at the working group meeting and they suggested that the modular nature and simple construction would offer great opportunities to involve undergraduate students. In the spring of 2001 the idea evolved into several MRI proposals submitted by 10 different institutions, most of them undergraduate schools (Ref. 1). The Modular Neutron Array Collaboration (MoNA) was founded. The proposals totaling over one million dollars were funded by the NSF in the summer of 2001. Following the detailed design, the first modules of the detector array were delivered in the summer of 2002. During the following year all modules were assembled and tested by undergraduate students at their schools (Ref. 1), and finally added to form the complete array at the NSCL (Figure 1).

In a 2008 publication (Ref. 2) the formation of the MoNA collaboration, construction, testing and assembly of the detector, and first experiments were described in detail. Since then, the membership of the collaboration has evolved (see Table 1), and in 2009 proposals were written and funded to construct the $1.3 million Large multi-Institution Scintillator Array (LISA). The MoNA collaboration continued after the initial phase of construction and commissioning was concluded, and is now using the MoNA LISA detector array for experiments, giving a large number of undergraduate students from all collaborating schools the opportunity to take part in cutting-edge nuclear physics experiments at one of the world’s leading rare-isotope facilities (Ref. 3). In 2012, Hampton University (which is a Historically Black College), Michigan State University and Augustana College received an award from the National Science and Security Consortium (Ref. 4), a DoE/NSA funded consortium, to join the MONA collaboration. The HU/MSU/Augustana proposal focused on the construction of the segmented target. Since its involvement, several students from three minority institutions have been included in MONA related research: two graduate students (both from Hampton University) and three undergraduate students (from Hampton University, Howard University and Alabama A&M University). Dr. Paul Gueye, PI of the Hampton University grant, officially joined the MONA Collaboration in 2013. This paper reports on the continued success of the collaboration and the undergraduate students who continue to take advantage of this unique research opportunity.
Figure 1: Students and faculty assembling the MoNA LISA detector.

Table 1. Chronology of the MoNA Collaboration

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Augustana College (IL)</td>
<td>Ball State University</td>
<td>Central Michigan University</td>
<td>Central Michigan University</td>
</tr>
<tr>
<td>Ball State University</td>
<td>Central Michigan University</td>
<td>Concordia College at Moorhead</td>
<td>Concordia College at Moorhead</td>
</tr>
<tr>
<td>Central Michigan University</td>
<td>Central Michigan University</td>
<td>Concordia College at Moorhead</td>
<td>Concordia College at Moorhead</td>
</tr>
<tr>
<td>Concordia College at Moorhead</td>
<td>Florida State University</td>
<td>Gettysburg College</td>
<td>Gettysburg College</td>
</tr>
<tr>
<td>Florida State University</td>
<td>Hampton University</td>
<td>Hope College</td>
<td>Hope College</td>
</tr>
<tr>
<td>Gettysburg College</td>
<td>Indiana University South Bend</td>
<td>Indiana University South Bend</td>
<td>Indiana University South Bend</td>
</tr>
<tr>
<td>Hampton University</td>
<td>Indiana Wesleyan University</td>
<td>Marquette University</td>
<td>Marquette University</td>
</tr>
<tr>
<td>Indiana Wesleyan University</td>
<td>Michigan State University</td>
<td>Michigan State University</td>
<td>Michigan State University</td>
</tr>
<tr>
<td>Marquette University</td>
<td>Milliken College</td>
<td>Ohio Wesleyan University</td>
<td>Ohio Wesleyan University</td>
</tr>
<tr>
<td>Michigan State University</td>
<td>Ohio Wesleyan University</td>
<td>Rhodes College</td>
<td>Rhodes College</td>
</tr>
<tr>
<td>Ohio Wesleyan University</td>
<td>Rhodes College</td>
<td>St. John’s College (MD)</td>
<td>St. John’s College (MD)</td>
</tr>
<tr>
<td>Rhodes College</td>
<td>St. John’s College (MD)</td>
<td>Wabash College</td>
<td>Wabash College</td>
</tr>
<tr>
<td>St. John’s College (MD)</td>
<td>Wabash College</td>
<td>Western Michigan University</td>
<td>Western Michigan University</td>
</tr>
<tr>
<td>Western Michigan University</td>
<td>Western Michigan University</td>
<td>Westmont College</td>
<td>Westmont College</td>
</tr>
<tr>
<td>Westmont College</td>
<td>Westmont College</td>
<td>Westmont College</td>
<td>Westmont College</td>
</tr>
</tbody>
</table>
THE ROLE OF UNDERGRADUATE STUDENTS

The physical characteristics and performance of MoNA were not the only things carefully considered by the collaboration. From the outset, several goals for the education of undergraduate students were identified: How can these students be continually and effectively involved in forefront research? What are the benefits to the students from this participation? What are the benefits to institutions and faculty members? When students participate in the experiments and when they work with the data sets, how can they evolve from passive watchers to active doers with the responsibility to get answers?

The collaboration has addressed this challenge by creating intensive summer sessions designed for undergraduates, encouraging students to participate in all phases of experiments, holding several meetings a year that include undergraduate participants, and employing information technology to bring the distant undergraduate students together (Ref. 3). Figure 2 shows a large group of MoNA undergraduates working in the control room during an experiment.

Many voices have recognized the need for a strong basic science program in the United States. Most recently the National Academy of Sciences published the “Rising Above the Gathering Storm” (Ref. 5) study that outlines consequences and needed actions. The coming decade will need a steady stream of people (new physicists) as well as strong financial support. As in the past many of these people will come from undergraduate institutions and the most prepared will be those involved in meaningful undergraduate research as done by the MoNA collaboration at the NSCL involving fragmentation. While planning future installations for nuclear physics, the value of this educational approach and training must be recognized. Undergraduates must be involved in an affirming environment where they are engaged at a high intellectual level and truly challenged so they are ready for the work yet to be done. The MONA Collaboration has now established itself as a powerful collaboration with a strong track record in training undergraduate students to do research and produce peer reviewed articles in nuclear physics.

OUTCOMES

Since the start of this collaboration, more than 160 undergraduate students from over 25 different colleges and universities as well as a few high school students have been actively involved in building, testing, and operating the MoNA and LISA detectors. These diverse undergraduate students have worked with one another in assembling and testing MoNA and LISA and in operating it during experiments. They have pulled shifts and put in the long hours that are characteristic of work in experimental nuclear physics. The graduate students and post docs at the NSCL provide approachable role models for them, and they feel free to ask questions of any of the faculty members in the group. For students from small undergraduate physics departments, participation in the MoNA collaboration provides a chance to experience the way physics is done in a large graduate physics department and at a world-class nuclear physics laboratory. The experience is particularly important for students who do not go on to graduate school in physics because they gain an understanding of how hard experimental scientists work to uncover the data points that underpin the theories written up in science texts and news magazines. The support of physics students who do not work as
nuclear physicists but have careers in industry, K-12 education, or even the arts is important in reaching the non-scientists who control the funding for nuclear physics.

<table>
<thead>
<tr>
<th>Table 2. Experiments, publications, presentations and grants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiments</td>
</tr>
<tr>
<td>Publications in refereed journals</td>
</tr>
<tr>
<td>Publications in refereed journals with undergraduates as first author</td>
</tr>
<tr>
<td>Undergraduate coauthors in refereed journal publications</td>
</tr>
<tr>
<td>Conference proceedings</td>
</tr>
<tr>
<td>Invited talks</td>
</tr>
<tr>
<td>Faculty talks at conferences</td>
</tr>
<tr>
<td>Talks and posters at international conferences with undergraduates as first author</td>
</tr>
<tr>
<td>Talks and posters at regional conferences with undergraduates as first author</td>
</tr>
<tr>
<td>Seminars and colloquia</td>
</tr>
<tr>
<td>NSF grants</td>
</tr>
</tbody>
</table>

**DISTRIBUTED ANALYSIS**

A feature of the MoNA collaboration that is an outgrowth of our collective work with undergraduate researchers is the emphasis on doing more than detector assembly or running shifts. In particular, the collaboration has a mechanism in place that allows the undergraduates to carry out the actual data analysis of the experiments.

One mode is that a student, with guidance from their mentor and the collaboration, has the primary responsibility for the analysis much like a traditional graduate student; other students may be involved but that student does much of the work and oversees and integrates the work of others. Students can work with more senior researchers where they provide hours on task and have a good overview of the experiment but do not have the ultimate responsibility for the results. Undergraduate students with limited time for work can still participate by working on very focused aspects such as the calibration of a single detector subsystem, code checking, or validation of the work of others (Figure 3). Lastly, some collaboration members have undertaken the difficult task of improving the analysis algorithms and extending the detailed understanding of operations.

Figure 3: Students checking the electrical signals from the MoNA LISA detectors.

We are able to involve undergraduate students in this way because we have the tradition of expecting such work from our students but also because of the collaboration infrastructure that is in place. Frankly, it would be difficult for single
researchers from a primarily undergraduate institution to work successfully with their students on the analysis of such measurements in isolation. The fact that those involved participate in regular video-conferences where recent results and problems can be discussed with others also working on the same experiment or related analyses is crucial. The expertise that comes to the table in this fashion makes the group effort very strong.

Giving the students responsibility for the analysis in these ways additionally results in increased effectiveness during the actual experiments. They are much more involved and make significant contributions by doing preliminary analysis as the data is being recorded.

But the largest benefit to this type of undergraduate involvement is that they are enthused to continue on to graduate study and they are extremely well prepared to continue in research. They have mastered many fundamental research skills and understand the problem solving process that is essential to carry research through to a conclusion. In fact, the MoNA collaboration has dramatically impacted the interest of undergraduate students in pursuing physics graduate school with an emphasis in nuclear physics (Figures 4 and 5).

![Figure 4: Career choices of BS/BA graduates from bachelor's granting institutions in the U.S. from an AIP survey (Ref. 6) and from the MoNA collaboration. The AIP data is from 1974 respondents from 2011 and 2012, and the MoNA data is based on 97 students from 2002 to 2014.](image-url)
Figure 5: Fraction of graduate students in nuclear physics. The U.S. fraction corresponds to the average number of PhDs from 2000 to 2012 (Ref. 6).

The MoNA collaboration has had a significant national impact regarding the increase of the STEM workforce. The current job and geographic distribution of students are shown in Figures 6 and 7: about 70% of the students go into graduate school or are pursuing a STEM career.

Figure 6: Present job distribution of all current and past MoNA students. Twenty-nine students are still in college, 48 students are currently in graduate school, 5 are PostDocs, 62 are employed in STEM fields, 12 are in non-STEM fields, and the status of 7 past students is unknown.
SUMMER RESEARCH

Summer is still the best time for undergraduates to get involved in major research projects. In addition to the undergraduate students from the collaborating institutions, many REU students joined the research efforts during the summers. The collaboration used this opportunity for workshops to teach the students about all aspects of MoNA. These workshops include formal presentations and mini-lectures on the experimental details and pertinent background material such as radioactive beam production, laboratory safety, and experimental electronics. These duties are shared amongst the collaboration’s undergraduate professors and NSCL staff. The talks last an hour and a half each morning and then the students are put to work—finishing preparations, calibrating, and testing components—throughout the afternoon and into the evening. This intense and rigorous training period typically lasts for two weeks and culminates with an experiment that employs a lot of what the students just learned. At the end of the three week session, the students return to their summer obligations or begin analyzing the data from the experiment. Several of these students, well prepared by the MoNA Summer Session, return during the school year to help with other experiments.

COLLABORATION RETREAT

Near the end of each summer the MoNA collaboration has historically held a retreat at the Central Michigan Biological Station on Beaver Island, located in the northern tip of Lake Michigan. In 2014, the retreat was held at Michigan State University and in 2015, the retreat was held at Westmont College in Santa Barbara, CA. Faculty and students participate in this annual gathering to write papers, discuss analysis, develop proposals for experiments and external support, and plan for the year ahead (Figure 19).

At the 2005 Beaver Island retreat a proposal was developed and subsequently received funding of $50,000 from the Research Excellence Fund of Michigan to purchase digital video-conferencing equipment. In addition to the specific needs of the MoNA collaboration that this hardware is intended to address, the video-conferencing infrastructure has offered substantial benefits to individual student and faculty participants at the member undergraduate institutions, to these institutions themselves, to the collaboration, and to the broader profession.

The equipment has allowed undergraduate students to participate in the real-time acquisition and off-line analysis of data. This novel remote approach to doing physics will give students the opportunity to participate in MoNA experiments together with other collaborators from multiple off-site locations and from the NSCL. Students are no longer prevented from participating in an experiment due to academic-year course commitments or travel constraints. The digital video conferencing system also allows faculty and students to have regular group, subgroup and point-to-point meetings where pre-experiment planning is being discussed and post-experimental data analysis is coordinated. The system is further being used for training, educating and motivating students who are new to the project. The
system compliments the other forms of communication used by the collaboration, such as databases, websites, phones, and e-mail.

Data analysis and real-time experimental participation, facilitated by the conferencing system, will help students to foster stronger and more confident ties to the MoNA collaboration. This aspect of regular collaborative face-to-face interaction with members of the MoNA collaboration will continue to allow students to be genuine members of the group and contribute to the physics results produced by the collaboration.

WHY UNDERGRADUATE PARTICIPATION WORKS SO WELL WITH MoNA AT THE NSCL

The MoNA collaboration has found it very easy to involve students in the fragmentation studies at the NSCL. The students can readily grasp the basic goals of the measurements. As stated above, the academic atmosphere works well for the faculty and the undergraduate students fit in well (they especially relate to the graduate students), but additionally, the physics is easy for the students to understand. The reconstruction of the original nuclear mass is based on relativistic four-vectors. The nuclear shell model and single particle states, while complex in detail, can easily be related to atomic shells. The students are able to see the big picture while being involved in the experimental detail. Students see moderately complex detector systems but which are actually easily understood. (The concept of determining neutron energy from time-of-flight can be understood by first-year students.) The physics based on fragmentation provides tremendous opportunities for the undergraduate researcher (and their mentors).

In no small measure, the MoNA collaboration has been able to successfully and meaningfully involve undergraduates because the NSCL is an academic setting. The significant interaction of the undergraduate students with the graduate students and senior researchers, that are also instructors, has been very beneficial. The undergraduates are always greatly affirmed and encouraged. The mentors of these students also appreciate the support received from fellow academics.

CONCLUSION

The MoNA collaboration has been able to take advantage of the varying areas of expertise of its members to create a collaboration which has effectively involved undergraduate students from its beginning and continues to do so to this day. Students readily understand the nature of these experiments, and can participate in meaningful ways. The impact on these students of exposure to the international-level research currently conducted at NSCL is significant, and helps to train the next generation of physicists. A future isotope research facility that could continue this excellent support of undergraduate research would be welcomed by the MoNA collaboration, and would be an asset for our field of research.

WORKS CITED

Renegotiating Psychological And Moral Contracts: I Made You Millions And You Paid Me Pennies!

Prescott C. Ensign, Wilfrid Laurier University, Canada

ABSTRACT

Building on Thompson & Hart (2006) we take a psychological contract as a “set of perceived, but unwritten, obligations” that are accepted. Obligations shape behavior and influence evaluations of fairness and integrity. In this paper we explore ethical conduct and the moral basis for contract re-examination when no legal basis exists to do so. Though “psychological contracts may be informed by explicit, written employment contracts in the work setting … a set of expectations about reciprocal obligations that extend beyond, or perhaps even contradict, formal written contracts” are often developed (Thompson & Hart 2006).

When legal contractual obligations are satisfied is there still room for bargaining? And what about post-hoc after the value of the good or service is realized – can compensation be adjusted after the transaction is over? An employer in good faith or otherwise may retain an individual to work on a project that has uncertain benefits. The cowboy yodeler from Dusty, Washington was paid $590 to create and sing the three-note yodel that is now the audible hallmark for Yahoo. What is his recourse if he believes he is entitled to more money? If Yahoo has satisfied its legal obligation what reasons would it have to open a done deal? Blackmail, public appeals for fairness, or moral prerogative might be some impetus. Carolyn Davidson, while a graphic design student, charged $35 for the now ubiquitous Nike logo. What dictates whether Nike should reconsider the fair value for the Swoosh? Such scenarios are common as new enterprises might soar into the stratosphere or quickly fail. There are also competitive pressures for the performance of contractually based work. Artists and engineers commonly agree to perform tasks where the value may be uncertain and bargaining with complete information is impractical.
Female English Student Teachers’ Views On Benefits Of Academic Group Work
Matodzi Nancy Lambani, University of Venda, South Africa
Zachariah Nengome, University of Venda, South Africa

ABSTRACT

Students learning through the medium of English as a second language (L2) always face challenges and therefore relevant strategies to enhance learning should be employed. The research paper was conducted among six (6) randomly sampled female third-year level former dropout student teachers at a selected university in South Africa. The investigation focused on whether the students who actively participated in class were members of students’ study groups or not. A questionnaire comprising questions relating to the benefits of group work was employed to obtain students’ views regarding the matter. The sampled students were involved in various study groups which they had formed; and they responded positively to all the questions. The results revealed that all the students who performed well in class exercises, tests, assignments and discussions were members of particular study groups. The paper concludes that the students’ good performance was largely dependent on knowledge gained from the discussions held within the groups. Therefore, group work influences students to actively take part in the learning process and helps them succeed academically. It offers students several opportunities to develop required skills necessary for the academic learning environment.

Keywords: Learning, Performance, Discussions, Academic, Environment
A Relation Between Emo-Diversity And Cognitive Flexibility

Suyoung Jo, AJOU University, South Korea
Hyeonjeong Lee, AJOU University, South Korea
Youngjun Kim, AJOU University, South Korea

ABSTRACT

Emo-diversity is a concept that quantifies the number of types of emotions experienced (Quoidbach et al, 2014). High emo-diversity means experiencing a variety of emotions, and a person with high emo-diversity has adaptive value to cope with various situations. The diversity of emotion is related to psychological flexibility, because that means one can experience and express various emotions in various situations. Psychological flexibility is also related to the performance of cognitive tasks such as decision-making tasks (Collis, 2012), and psychological flexibility (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996; Kashdan & Rottenberg, 2010). However, the direct relevance of emotional diversity and cognitive tasks requiring cognitive flexibility for problem solving is not well known. This study was conducted to find out whether a person with rich emotions is better at cognitively flexible thinking. To measure the emo-diversity, we used 18 items (9 affirmative emotions, 9 negative emotions) based on the items used in the Differential Emotional Scale (Philippot, Schaefer, & Herbette, 2003). To measure the cognitive performance, a card assigning task using the Task Switch paradigm, which is a representative task to measure cognitive flexibility, was performed. We demonstrate that the feeling of various emotions is related to the cognitive flexibility, especially in the variety of negative emotions. Based on a research that cognitive flexibility plays an important role in learning (Borger-Mehall, 2007), we suggest that providing opportunities to experience emotional abundance in the educational environment can help learners.

Keywords: Emo-Diversity, Cognitive Flexibility, Task Switch
The Motivational Aspects
Of Autonomy On Decision Making

Jayoung Gu, Ajou University, South Korea
Jaemyoung Shin, Ajou University, South Korea
Youngjun Kim, Ajou University, South Korea

ABSTRACT

The psychological well-being (PWB) is an objective measure of the quality of personal life, which is composed of six theoretical psychological dimensions: Self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life and personal growth (Ryff et al., 1989). The dimensions of PWB reflects the individual’s motivational aspects. On the basis that motivation acts as a mechanism for decision making, we can predict a relevance of PWB and DM. Thus our study has examined the relationship between PWB and DM by using a task switching paradigm. The task switching means that the task type participants selected in n trial different from the task type in n-1 trial. We calculate a switch rate, which means a tendency of DM when participants have an opportunity for selecting a task type. As a result of the experiment, a positive correlation between autonomy and switch rates are significant (r=.234, p=.053). This result shows that the higher the autonomy, the greater the switching between the tasks. Our result presents some issues for the education. Deci, Ryan (1985) found that choice, acknowledgement of feelings and opportunities for self-direction can enhance one’s intrinsic motivation by allowing themselves a greater feeling of autonomy. Florrie also predicted the enhanced performance of children with low-achieving on challenging task when their autonomy is supported by mother. Through these findings, we can predict outcomes in children’s academic situations from association of autonomy and DM.
Preliminary Study For Development And Validation Of A Authentic Scale

Gyuri Kim, AJOU University, South Korea  
Seonhee Choi, AJOU University, South Korea  
Youngjun Kim, AJOU University, South Korea  
Jiyeon Kim, AJOU University, South Korea  
Youngil Kim, AJOU University, South Korea  
Heungcheol Lee, AJOU University, South Korea  
Kyungil Kim AJOU University, South Korea

ABSTRACT

This study is conducted to clarify the factors on the authenticity of the scales and to clarify inferior concepts. Inferior concepts of authenticity scale are studied by Wood(Self Alienation, Authentic Living, Accepting External Influence, 2008), Knoll(Authentic Self Awareness, Authentic Self Expression, 2015), and Kerris et al.(Awareness, Unbiased Procession, Behavioral, Relational Orientation, 2006). However, the conceptual connectivity of scales has not been explicitly defined. The reliability of existing scales is also problematic because it is not significant enough. We conducted a validity analysis with a 90 items which containing existing items, and new items that fit the authenticity of the concept. The analysis result confirms that there are total three factors associated with the authenticity of the analytic measures, we selected 20 items within first 90 items which have high reliability. Three factors about authentic scale are the most suitable factors that is same with the Wood's(2008). Therefore, We suggest that we developed a more reliable measure of reliability based on Wood's.

Keyword: Authenticity Scale, Validation Research, Subjective Well-Being
Analysis Of Selection Patterns Between Intertemporal Choice Depending On Gain And Loss Frame

Kanghyuk Do, AJOU University, South Korea
Jeeyoun Kim, AJOU University, South Korea
Youngjun Kim, AJOU University, South Korea
Youngil Kim, AJOU University, South Korea
Kyungil Kim, AJOU University, South Korea

ABSTRACT

Which one would you choose between a sooner & smaller and later & larger amount of money? Intertemporal choice is the study of how people make choices about what and how much to do at various points in time. These choices are influenced by the relative value people assign to two or more payoffs at different points in time. However, the intertemporal decision studies are studied by gain frame so far. Therefore, in this study, we tried to find out how people’s judgments are done in a loss frame rather than a gain frame. In the experimental situation, participants are supposed to choose one of two options (SS vs. LL) in two frames (gain & Loss). Through the analysis, we are confirmed that the participants responded certainly to did not wait in the loss frame, while participants responded to wait longer in the gain frame. Like the prospect theory, participants show the loss aversion more in loss frame. This research has importance about to identify the intertemporal decision making pattern in loss frame and to confirm that participants selections are inclined to avoid larger amount of options in loss frame.

Keywords: Intertemporal Choice, Decision Making, Framing Effect, Prospect Theory
Design And Implementation Of Interdisciplinary STEM Instruction- A Case Study Of Computational Physics

Ming-Tsan Wang, National Taiwan Normal University, Taiwan
Yu-Tzu Lin, National Taiwan Normal University, Taiwan
Po-Han Chiu, National Taiwan Normal University, Taiwan
Cheng-Chih Wu, National Taiwan Normal University, Taiwan

ABSTRACT

This study designed and implemented interdisciplinary STEM instruction, and also evaluated its performance. Computational physics was adopted as an example, to explore the effect of interdisciplinary of programming and physics kinematics on the learning of programming and physics kinematics. Modelling plays an important role in science education, some previous researches applied simulation software in physics education to provide students with opportunities of modelling, but only a few researches allowed students to model the physics phenomena and its mathematical equations via programming. However, since modelling is also an important computational thinking strategy, modeling through computation helps students describe the behaviors of real-world phenomena more accurately. Therefore, we intended to design, modelling-based instruction to make students experience both computational modelling and physics modelling, and benefit from the interactive process of these two types of modelling. The study conducted a quasi experimental research methodology to examine the benefit of applying computational physics in programming instruction, the experimental participants were 167 students in the first grade of senior high school, as for the experimental group in computer courses, the computer teachers guided students to solve real physics problems by the modeling process. During the problem solving process, the student went through modelling to learn programming and at the same time the concept of physics. Whereas for controlling group, the students are taught in the traditional methodology, the teachers focused more on teaching programming skills. The result shows that, integrated programming and physics learning through the modeling process could assist students in improving their programming ability and understanding of physics kinematics. Besides, such teaching strategy made the students in the experimental group experience more real-world problem solving, and appreciate that the real-world problems are complex and multifaceted.

INTRODUCTION

Interdisciplinary STEM Education

STEM is the abbreviation of Science, Technology, Engineering, Mathematics, and the purpose of STEM is to cultivate nation’s future talents in the field of science, technology, engineering, and mathematics. The attempts of such integrated courses are to increase student interest in these subjects, and apply such knowledge to the real-world. The U.S. education hopes to enhance students' ability to solve problems, innovation, and critical thinking through STEM (National Research Council, 2011).

STEM emphasizes the integration between disciplines, combining students' prior knowledge; provide students the opportunity to apply the knowledge into practice. During the problem solving process students contacted with other interdisciplinary knowledge and have learned from it and applied such knowledge to the problem scenario (Lou, Shih, Ray Diez, & Tseng, 2011).

STEM should be regarded as an integrated bridge, and the knowledge learned is not a fragment and isolation, STEM also provided the opportunity for students to understand the real-world in many ways (Morrison, 2006). Students
learned how to integrate knowledge from different interdisciplinary, learned how to apply such knowledge in problem solving aspect, STEM teaching can be regarded as a training course for solving problems.

STEM teaching allows students to understand the problem solving process of STEM (Lou, Shih, Ray Diez, & Tseng, 2011), and during the process of solving the problem, the students put forward questions and hypotheses based on the prior knowledge, in accordance to the problem learning needs of interdisciplinary skills, organizational knowledge, problems encountered, and the guidance from teacher, to experiment and verify the problem. STEM provides opportunities for students to connected with the real-world, student can think multi-dynamically and interdisciplinary learning.

Modeling

Model and modeling in the field of science have been treated as significant elements; and scientist use models to represent a particular phenomenon in the world, the scientific model is then tested in the real-world, and scientific fields treated every step and rigorous process with importance. Students in the field of exploring science will often experience the following processes: observation, hypothesis, experiment, analysis and conclusion, if the hypothesis is incorrect, then defining a new hypothesis is required, moreover, re-experiment and verification are also required until new conclusion can be made.

When learning or solving physics problems, students are required to establish physics models, in order to effectively resolve the problems, and obtain conclusion. Modeling process plays an important role (Lijnse, 2006). There are multiple representations of physics phenomena, and physics modeling is one of the ways of representation, which has to undergo a series of complex processes: Students require to recall the physics knowledge, understand the meaning of the formula and symbol, and proceed with the assumptions and analysis of the problem, in order to overcome the barriers to resolve the problem. In addition, to verify the understanding and the purpose of this series of processes, which is helpful for students to analyze physics problems and to understand the physics problem solving (Teodorescu, Bennhold, Feldman, & Medsker, 2013)?

When learning or resolving computer science problems, arithmetic is an indispensable tool, computational thinking is also a way to solve the problem, which is a tool to convert challenging problems into easier ones (Wing, 2006). Selby & Woollard (2013) deemed Computational Thinking as a process of cognition or thinking which included abstractions, terms of decomposition, algorithmically, terms of evaluations, and generalizations. When we have the Computational Thinking Ability, it can help us to solve the problem of the real-world. Computational thinking is not a pronoun of programming (Wing, 2006), but when we are learning programming, we think computationally, which could train computational thinking to solve real-world problems.

Computational Thinking and programming are inseparable; Programming is often used to solve real-world problems. When learning programming, computational modelling is a relatively rigorous and complex process; to analyze problems, identify its role in the model, understand the relationship of variables and equations, proceed with the inference and induction, the application of program modeling to proceed with quantitative and generalization, interpretation and record model, lastly proceed with the evaluation (Sins, Savelsbergh, & van Joolingen, 2005). These series of course train students to have the step of the procedures, and logical thinking.

When learning programming and physics, the students will experience a series of complex and rigorous course, which help students to understand the real-world problem. We intended to design modelling-based instruction to make students experience both computational modelling and physics modelling, and benefit from the interactive process of these two types of modelling.

Programming Learning

Programming for beginners in the learning process, often do not comprehend the purpose of programming, many courses took programming language as the partition of the unit, students learn programming language in each of the class, practice easy questions, which could not be connected to the real-world scenario and often think programming is boring, and require to remember many languages which they do not know the purpose of. Another challenge which
beginner often face is debugging, this is because programming emphasize on problem solving, program structure is more rigorous, as long as there are something wrong with grammar, capital and small case of letters, order, concept, etc.… the program would be unable to create results, and it is not easy for beginner to spot the error and would require more time to accumulate his/her ability (Xu & Rajlich, 2004). If the result could not be generated after numerous attempts, then it would be prone to setbacks.

The use of physics topics in programming courses, as physics topics and daily life is closely related, which could reflect the real-world scenario when solving physics problem. Students learn the programming skills and physics concepts needed to solve the problem, which would allow the student to understand the purpose of such programming, and clarify the relationship between physics formula, concept, parameters and equations.

Physics Learning

Students in the course of learning physics, physics has a variety of expressions (formula, graphics, experiments, etc.), Students in learning often unable to convert each kind of expression, which is causing some difficulties easily; In the study of physics formula and physics concepts, if the concept is more abstract, and if the teacher is providing the lecture verbally, it would not be easy for student to understand the concept from the abstract. When derivate and explain the formula, student would be unable to provide the correct explanation on the formula. In addition, would be unclear to apply under what condition, as well as unable to understand the relationship between parameters and equations (Bagno, Berger, & Eylon, 2008). In turns of learning student would often memorize the formula without any true understanding to deal with the physics questions during the examination.

At present, there are many computer simulations applied in physics teaching, students can observe physics phenomena from animation, and can adjust the parameters repeatedly for comparison and observation of various phenomena. Simulation software helps students to turn abstract concepts to materialization concepts, students in the process of repeated simulations could understand the relationship between parameters and equations. Redish & Wilson(2000) developed a computer environment to develop fundamental physics courses, through student programming, student could organize the concept of physics, and through programming, student could appreciate the importance of order, as well as better understanding in in parameters and programming, in addition, the connection of variables and programming code. Students can deepen their understanding of the concept of Physics by the process of programming instead of simulation software (Taub, Armoni, Bagno, & Ben-Ari, 2015).

This research is based on the integrated teaching materials on the modeling process of programming and the interdisciplinary of physics kinematics. Computer teachers guide students to solve real physics problems by modeling process, and to explore the influence of integrated interdisciplinary of programming and physics kinematics on the students' learning programming and the learning attitude of physics kinematics.

THE STUDY

Methodology

The purpose of this study is to explore the application of interdisciplinary learning in programming and physics to students' programming learning achievement, physics kinematics learning achievement, the influence of interdisciplinary integration attitude and the experiment was carried out in accordance to the quasi experimental research methodology. (Table 1) is the modeling process used in this study, which followed the modelling development process of programming and interdisciplinary integration of physics kinematics as the teaching material. In every week’s computer class the teacher would guide student in resolving physics problems using modelling process, by using physics problem, it would enable the student to be connected to the real-world, and during the problem solving process, student would be able to learn the skills required in solving such problems, these consisted of programming structure and concept, physics concept and equation, and finally resolving problems and proceed with verification and observation. Prior to the whole experiment, student carried out computational thinking ability test, Junior high school physics kinematics test, and programming and physics interdisciplinary integration attitude test, in order to understand the knowledge and ability of all students’ programming and physics kinematics.
**Table 1: The modeling process used in this study**

<table>
<thead>
<tr>
<th>Modeling</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyse</td>
<td>Student knew the problem, able to describe the physics simulation phenomenon that the program is written to display, able to breakdown the problems into several variables, and able to explain the meaning of each variables and the relationship of each variables to the problems.</td>
</tr>
<tr>
<td>Inductive Reasoning</td>
<td>In the process of analyzing the problem, the students can categorize the concept of the structure of the programming and the physics kinematics. In addition, able to describe why opt for programming and physics kinematics, describe such structure and concept’s meaning and able to clearly apply such formula.</td>
</tr>
<tr>
<td>Quantify</td>
<td>The student is able to categorize physics formula and represent them in programming code, able to accurately write up the summed up the structure of the programming, and solve physics problems, able to simulate physics phenomena.</td>
</tr>
<tr>
<td>Explain</td>
<td>The student is able to change the value and carry out tests repeatedly and describe the phenomenon of each tests, student is able to explain the meaning of all the programming code, and able to describe the relationship between programming and physics concept.</td>
</tr>
<tr>
<td>Evaluate</td>
<td>The student is able to carry out self-evaluation to see whether they can solve such problems, after the evaluation, student would think whether such thought is the same as his/her original thought, students can take the initiative to verify and reflect on the knowledge learned.</td>
</tr>
</tbody>
</table>

The duration of the course was one term, there are four classes which participated, 84 participants are in the controlled group (50 females and 34 males), 83 participants are in the experimental group (50 females and 33 males). The experimental procedure mainly includes, learning activities, two programming tests, midterm exam, special project, End of term exam. Data are collected for quantitative and qualitative data, which includes a student study list, program and physics homework, two programming tests, midterm exam, project score, end of term test and structured interview data after the experiment. The data will be coded after the experiment and relevant statistical analysis will be carried out in order to explore the influence of student learning programming and physics kinematics with such modelling teaching strategy.

**RESULTS AND FINDINGS**

According to the analysis of quasi experimental research methodology, the results show that the gradual achievement for the experimental group and the control group have significant differences in the programming (Table 2), this represented that the teaching model with experimental group has a significant effect on student’s programming concept and structure learning. The students in the experimental group attended weekly classes under modeling process which guide students to solve physics problems, students are able to resolve problems weekly, and learned programming structure and physics concept, whereas, for controlled group in learning the program language and structure, and if the program structure was the same, the code length of the control group is relatively shorter, due to the difference in the setting of variable. The code length of the experimental group is relatively longer; this is because of the need to develop a number of additional variables to simulate physics phenomena and to observe the problem. Studies have found out that experimental group has long been solving real-world physics problem, although the process of controlled group was much more complex, and required the integration of programming and physics knowledge, but during the testing period of programming, the result of both experimental group and controlled group has significant difference. This indicated that during the teaching strategy students have truly learned the structure and the concept of programming.
The grade achievement difference of both controlled group and experimental group are statistically analyze by using ANCONA, $p<0.5$ has significant difference

<table>
<thead>
<tr>
<th></th>
<th>$N$</th>
<th>Mean</th>
<th>SD</th>
<th>$f$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controlled Group</td>
<td>82</td>
<td>56</td>
<td>17</td>
<td>52.1</td>
<td>0.000</td>
</tr>
<tr>
<td>experimental group</td>
<td>83</td>
<td>74</td>
<td>17</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The below (Table 3) shows significant grade achievement difference between the experimental group and controlled group on physics kinematics during midterm exam, the result shows found that experimental group student analyze problems on a weekly basis, summed up how to use the program structure and physics concepts, describing the idea by using programming code, verification and observation. The experimental group students manually write code, coding is a very rigorous step, if the sequence or concept is incorrect; the program would not be able to operate, students would require to clarify the unclear physics concept, if the program went well, the students would be able to observe physics phenomena through simulation, and student would be able to better understand physics concepts via observation. Judging from the result of the midterm physics exam, students’ learning on physics kinematics has a positive effect on the achievement.

<table>
<thead>
<tr>
<th></th>
<th>$N$</th>
<th>Mean</th>
<th>SD</th>
<th>$f$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controlled Group</td>
<td>83</td>
<td>67</td>
<td>24</td>
<td>2.9</td>
<td>0.088</td>
</tr>
<tr>
<td>experimental group</td>
<td>82</td>
<td>73</td>
<td>23</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Below (table 4) shows the differences between the experimental group and controlled group in the integration of programming and physics interdisciplinary, the attitude of the control group was higher than that of the experimental group by 1 point on average, which did not reach significant difference. The results of the study found that the experimental group of students learning program and physics on a weekly basis, although such learning Methodology is fun and interesting for students who are not good in physics, but it has a huge overload for those students, therefore, when filling in the Likert scale, lower score would be given, however, on the other hand, for students in the experimental group with better physics degree, such learning Methodology allows them to write their own code, observe physics phenomena, Change parameters and proceed with verification, students feel a sense of accomplishment, and have therefore gave positive feedback

<table>
<thead>
<tr>
<th></th>
<th>$N$</th>
<th>Mean</th>
<th>SD</th>
<th>$f$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controlled Group</td>
<td>83</td>
<td>89</td>
<td>15</td>
<td>0.04</td>
<td>0.829</td>
</tr>
<tr>
<td>experimental group</td>
<td>82</td>
<td>88</td>
<td>15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CONCLUSIONS

Empirical research was implemented in this study to verify the benefits of stem-based interdisciplinary instruction and develop programming and physics kinematics integration through modeling process, such teaching strategy is able to assist student in raising their ability in programming, and understanding of physics kinematics concept, although during the integration of programing and physics kinematics, the average score of experimental group was not higher than controlled group, but such teaching strategy allow student to be closer to the real-world problem. Students appreciate problems in the real-world is complex and with multidimensional (Morrison, 2006). When students face
problems in the future, it is expected of the students to have the ability of problem solving, innovation and critical thinking (National Research Council, 2011).

We can know whether there are any differences between programming and physics kinematics interdisciplinary instruction. The traditional teaching methodologies in Taiwan are divided into subject teaching, students generally have the academic pressure as for physics major or entrance exam, often unable to carry out interdisciplinary integration. The results of this study hope to contribute to the education in Taiwan, through the integration of programming and physics kinematics, to enable student to learn knowledge, and hope these findings and teaching strategies would improve and contribute to the future integration of programming course or interdisciplinary aspects.

REFERENCES


Applying 3D Printing In A Living Technology Course To Foster Student’s Creativity

Hsiang-Ting Chen, National Taiwan Normal University, Taiwan
Cheng-Chih Wu, National Taiwan Normal University, Taiwan
Yu-Tzu Lin, National Taiwan Normal University, Taiwan
Ming-Tsan Wang, National Taiwan Normal University, Taiwan
Sheng-An Tsai, Jiangcui Junior High School, Taiwan
Tsan-Chieh Huang, National Taiwan Normal University, Taiwan

ABSTRACT

In this study, 3D printing is applied to the life science and technology course to foster students’ creativity. The quasi-experimental method was conducted to examine the effects of applying 3D printing. The experimental group used 3D printing to produce the required gear elements to make toss machines whereas the control group made by using Gigo gears. Students in the experimental group had to produce their gears through the process of 3D printing design and production based on application of domain knowledge of mechanics and mathematics.

The main results of this study are as follows:

1. The experimental group’s artifacts had higher scores in three aspects of creativity: fluency, flexibility, and originality, than those of the control group. This is because students in the experimental group were motivated to produce distinctive artifacts by 3D printing. To create more distinctive gear components, students had to spend more time thinking about the mechanical design to produce novel gear collocation. Besides, 3D printing reduced the technical difficulty in the process of production and testing, therefore more novel ideas could be achieved with more choices and adjustments.

2. There was no significant difference between the two groups in the attitude towards science and technology, but the experiment group’s attitude toward science and technology was significant improved after 3D-printing-based learning. This is because the experimental group learning through the 3D printing process experienced more about the novelty of 3D technology and then believed more about the power of technology.

3. The experimental group’s design had higher stability than those of the control group. This is because in the 3D printing group, students had to carefully design their gears by creating 3D models based on the mechanical and mathematical knowledge. The reduced technical difficulty also helped students design their gear components with higher accuracy.