Third Annual Northeastern Pennsylvania Faculty Symposium

Proceedings

Sponsored by: The Academic Advisory Council of
The Institute for Public Policy & Economic Development
April 9, 2010
A partnership among, Keystone College, King’s College, Luzerne County Community College, Marywood University, Misericordia University, Penn State Wilkes-Barre, The Commonwealth Medical College, University of Scranton, & Wilkes University

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A special thank you to King’s College for hosting this year’s event.

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Third Annual Northeastern Pennsylvania Faculty Symposium  
Friday, April 9, 2010  
King’s College  
Sheehy-Farmer Campus Center  
8:30 a.m.-1:30 p.m.

8:00-8:30 a.m.   Registration  
Continental Breakfast Buffet  
(seating in Snyder Room)  
Faculty Discussion Tables

8:30 a.m.   Introductions  
Teri Ooms, Executive Director  
The Institute for Public Policy & Economic Development

8:35 a.m.   Welcome  
Nicholas Holodick, Vice President Academic Affairs,  
King’s College

8:00 a.m.-Noon Poster Viewing  
8:00 – 8:30 and 11:30 – Noon – Meet the Faculty  
Snyder Room

D.L. Glick, C. Gushue, H. Namdari, M.A. Wasilewski, M.A. Sulzinski, Kings’ College & University of Scranton  
Development of a Quantitative Real-Time PCR Assay for Burkholderia gladioli

Corina Slaff, Misericordia University  
Emotional Intelligence in University Presidents and Leadership.

Argyrios Varonides and Colby Haggerty, University of Scranton  
Photo-current Generation Analysis for Triple Junction n+-n-p GaAs-based Solar Cells

AC Varonides, RA Spalletta, University of Scranton  
Improved short-circuit currents for high efficiency Quantum Well GaAs-Ge p-i-n solar cells

Concurrent Panels  
8:45 a.m.-9:30 a.m.  
Panel A  
Walsh Room

Terry Clemente, Chris McCullion, Lisa Desando, Art Francis, Kevin Harcarik, Rob Stitzer, PSU-Wilkes-Barre  
Seeing the world through the eyes of a senior citizen

Alexander Dawoody, Marywood University  
Education as a Human Right: Examining the Education System in the United States

Jim Frutchey, Marywood University  
Scranton Times Coverage of the 1906 New York State League Champions Led by Moonlight Graham
Panel B  Fitzgerald Room

Phyllis Black, Dawn Apgar, Joanne Whelley, Marywood University & Barr University
W(h)ither the “A” – Strategies By Graduate Schools To Address Grade Inflation

Justin Matus, Kristin Summa, Wilkes University
Alumni Survey - How are we doing?

Panel C  Snyder Room

8:45 a.m.-10:15 a.m.

Benjaman Redan and James Loven, University of Scranton
A Low-Cost Passive Solar Array Reflector Project Proposal

Colby Haggerty and James Loven, University of Scranton
Solar Tracker Reflector: Research and Development

Gregory Niehaus and Mark Murphy, University of Scranton
The University of Scranton’s Solar Panel Array

Steven Tedford, Misericordia University
Characteristic Polynomials of Graphs

AC Varonides and RA Spalletta, University of Scranton
Multijunction High Efficiency Solar Cells, via Quantum Wells

Concurrent Panels-9:30 a.m.-10:15 a.m.  Lipo Room

Panel A

Herb Hauser, Marywood University
Remote Behavioral Monitoring of the live at-Home Elderly Implications for well being of the aged and the health care economy

Vincent J. Monastra, Marywood University
Task Force on the Early Identification and Treatment of Attention-Deficit & Hyperactivity Disorders

Jeff Holt, The Commonwealth Medical College
Breast Cancer

Sophie Till, Marywood University
Taubman/Golandsky Approach to the Violin
Panel B  
Fitzgerald Room

John Sumansky, William DesRosiers, Misericordia University  
*Business Incubators and Regional Economic Development: A Continuing Search for Impacts*

Christine E. Mellon, Wilkes University  
*Social Media*

Anthony L. Liuzzo, Karen M. Kaleta, Wilkes University  
*The State of the Accounting Profession in Northeastern Pennsylvania*

Scott J. Weiland, Marywood University  
*An Examination of the Relationship Among Perceived Infrastructure, Perceived Business Climate, Perceived Workforce, and Business Growth in Northeastern Pennsylvania*

Concurrent Panels 10:30 a.m.-11:45 a.m.

Panel A  
Fitzgerald Room

Estelle Campenni, Jacquelyn Preate, Marywood University  
*Mindfulness for the masses - No lotus position required*

Vijayachandra Ramachandra, Colleen Meighan, Jillian Gradzki, Marywood University  
*The Influence of Musical Training on the Phonological Loop and the Central Executive*

Ileana Szymanski, University of Scranton  
*Exiles as Guests and Hosts*

Laurie Cassidy, Amanda Lass, Marywood University  
*Imagining Suffering: The Moral Dilemmas of Viewing photographs of Human Anguish*

Sr. Mary Ann Zimmer, Marywood University  
*Insights from Practical Theology: Forging Successful Community Collaborations*

Panel B  
Walsh Room

John N. Mellon, Misericordia University  
*For Enhancing Communities of Higher Education Teaching Practices: Student Preferred Methods of Instruction Survey Results*

Russell Owens, King's College  
*Student-Created Tutorials as an Assistive Technology Instructional Module Using Computer-Based Instruction*

Alexandra Serio Younica, King's College  
*GIS and Ethics in the Undergraduate Classroom*

Gina Zanolini Morrison, Lou Jean Beishline, Siti Tapsir Hamisah, Wilkes University & Marywood University  
*A Cross Cultural Study on Women in Undergraduate Engineering in Malaysia and US: perceptions of Parental Influence on Academic Choice*

AC Varonides and RA Spalletta, University of Scranton  
*Design of Curriculum Modules for K-12, Undergraduate and Continuing Education in Sustainability and Renewable Energy*
12:00 p.m.-1:30 p.m.  Lunch  

**Moderator, Terry Clemente,** Chair, Academic Advisory Council; Penn State Wilkes-Barre

**Lunch Speakers:**
Daniel Flynn, Ph.D., Associate Dean of Research, Tech Transfer, Economic Development & Graduate Studies at The Commonwealth Medical College

Loren D. Prescott, Jr., Dean of the Law School Planning Initiative at Wilkes University

Gregory K. Hunt, FAIA, Founding Dean of the new School of Architecture at Marywood University

Bernard Graham, Ph.D., Dean of the Nesbitt College of Pharmacy & Nursing at Wilkes University

1:00 p.m.  

**Awards**

Terry Clemente, Chair, Academic Advisory Council; Penn State Wilkes-Barre

*Best paper award-
Vincent J. Monastra Ph.D., Marywood University*

*Best student faculty research-
James Loven Ph.D., University of Scranton
Benjamin Redan, University of Scranton*

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**Best Paper Award**

*Left to right; awarded to:  Vincent J. Monastra Ph.D., Marywood University, Terry Clemente, Chair, Academic Advisory Council; Penn State

**Best Student Faculty Research Award**

*Left to right; awarded to: James Loven Ph.D., University of Scranton, Terry Clemente, Chair, Academic Advisory Council; Penn State (Missing from photograph: Benjamin Redan, University of Scranton)
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A Cross Cultural Study on Women in Undergraduate Engineering in Maylasia and US: perceptions of Parental Influence on Academic Choice
Gina Zanolini Morrison, Ph.D., Wilkes University, Lou Jean Beishline Ph.D., Marywood University, Siti Tapsir Hamisah, Universiti Teknologi Malaysia

Design of Curriculum Modules for K-12, Undergraduate and Continuing Education in Sustainability and Renewable Energy
AC Varonides Ph.D. and RA Spalletta Ph.D., University of Scranton
Abstract

*Burkholderia gladioli* is associated with pneumonia in patients suffering from cystic fibrosis and chronic granulomatous disease. In addition, it is difficult for commercial identification systems to distinguish *B. gladioli* from the closely related *B. cepacia* complex. The purpose of this study was to develop a specific and sensitive quantitative Real-Time PCR (RT-PCR) test for the detection of *B. gladioli* DNA.

Potential RT-PCR primers were synthesized using information from the available known DNA sequence of *B. gladioli*. The primers were tested with purified bacterial DNA and LightCycler® Fast-Start DNA Master PLUS SYBR Green I, in the LightCycler 2.0 instrument.

Although many PCR primers were synthesized and tested, only one primer pair had the ability to specifically detect *B. gladioli* while at the same time not detect related bacteria such as *B. cepacea*. This primer pair sequence was obtained from the DNA sequence of the Esterase C gene of *B. gladioli* and produced an amplicon of 149 bp. Under optimized conditions, the RT-PCR method can detect 640 femtograms of *B. gladioli* (ATCC strain) DNA which is approximately 91 *B. gladioli* equivalents. The primers gave negative results with two ATCC strains of *B. cepacea* and two ATCC strains of *Pseudomonas aeruginosa*. The primers were able to positively identify four strains of *B. gladioli* isolated from infected onions and four strains from *B. gladioli* isolated from patients.

In summary, we have developed the first quantitative RT-PCR method for accurate identification and quantitation of *B. gladioli* recovered from both plant and clinical sources.
Emotional Intelligence in University Presidents and Leadership  
(postor presentation)  
Corina N. Slaff, Ph.D., Misericordia University

Abstract  
The topic of the presentation: Is the level of Emotional Intelligence (EQ) a predictor of leadership effectiveness in university presidents?

Study and findings: The study: “Emotional Intelligence and Academic Leadership: An Exploratory Study of College and University Presidents” measured the level of emotional intelligence in college/university presidents as determined by the MSCEIT (Mayer-Salovey-Caruso Emotional Intelligence); explored the relationship between the total emotional intelligence quotient (EIQ) and certain demographic factors such as age, gender, length of tenure, type of institutions that they are leading, type of final degree and field of study for final degree; and the participants’ understanding of the concept of emotional intelligence and its relationship to effective leadership. The data revealed that most presidents scored in the average ranges of emotional intelligence, that there was no significant relationship between the demographic factors and the total EIQ scores and that all presidents understood and believed in the concept of emotional intelligence, used it in their daily business dealings, and believes that it is indeed needed for effective leadership.

I will present the study and the findings of this research using posters. This will include data presented for the total EIQ scores for each president, demographic data by president. A summary of key findings from interviews with the participating presidents on the relationship between effective leadership and EQ will also be presented.

I will also (verbally) share data that was not initially included in the research document, but is relevant to effective leadership of higher education institutions.

Key learning objectives will be for the participants to the poster session to:
- evaluate the role EQ can play in effective academic leadership;
- recognize the importance of emotional intelligence in effective academic leadership;
- understand the need to develop emotionally intelligent leaders in faculty, staff, and students.
Photo-current Generation Analysis for Triple Junction n⁺-n-p GaAs-based Solar Cells (poster presentation)
AC Varonides Ph.D., Colby Haggerty, University of Scranton

Abstract
High efficiency solar cells are based on the synergy of two sub-cells absorbing solar photons at different wavelengths. Typically, the top cell is a lattice-matched unit grown on top of a high efficiency p-i-n sub-cell, and it suffers from weak current output, compared to its lower counterpart. On the other hand, total open circuit voltage of the device is the sum of the open circuit voltages of the two sub-cells, while the highest current output of the PV device is needed for high collection efficiency. We are focusing our attention on how to improve short circuit currents for bulk n⁺-n-p or p⁺-n-n solar cells. Absorption at different solar wavelengths takes place according to the nature of the layers selected in each cell. More specifically, we are presenting a detailed analysis of carrier photo-excitation and photo-current generation of the top unit (window) that consists of a triple junction n⁺-n-p cell. We evaluate (a) minority carrier concentration in the n⁺-region (b) photocarrier concentration in the n-region and (c) minority carrier in the p-region. We then replace the n⁺ layer with a wide gap (matched to the GaAs) AlAs layer, to increase chances for short wavelength absorption. We predict high short circuit currents, in excess of 30mA/cm², and of the same order as the ones from the lower unit.
Improved short-circuit currents for high efficiency
Quantum Well GaAs-Ge p-i-n solar cells
(poster presentation)
AC Varonides, Ph.D., & RA Spalletta Ph.D., University of Scranton

Abstract
We propose a model for GaAs/Ge multi-quantum well (mqw) p-i-n structures, through which, tunneling and thermionic currents can be calculated as functions of device geometry (quantum well and barrier width), Fermi energy and conduction band offset(s). Our model is adoptable to any mqw structure in the intrinsic region of pin solar cells. High short circuit currents are predicted based on a theoretical model encompassing both types of carriers (tunneling and thermally escaping), along with device parameters. More specifically, we evaluate tunneling currents via a generalized WKB method, and thermionic currents through photo-excitation of carriers escaping from quantum traps. Under one sun, and at room temperatures, we predict tunneling and thermal short-circuit currents in excess of 30mA/cm$^2$ for GaAs-Ge multijunction mid region of pin III-V solar cell structure. Probing further, we elaborate on ways of achieving high efficiency solar cells.
Abstract

As the number of adults over 65 increases in the Downtown Wilkes-Barre community, retailers and service providers should understand the senior citizen as a consumer and be sensitive to their changing needs in relationship to their shopping and purchasing behavior.

In the Fall of 2009, students experienced the downtown and shopped in stores, disguised as a senior citizen. They saw the world through a different set of eyes. The results of the study, and student recommendations for how retailers/service providers and the Downtown (The City and Chamber) should adapt to meet the needs of this important target population will be explored.
Abstract
This paper compares the educational system in the United States with that of two other countries. One is in Sweden, a developed country that enjoys peace and social tranquility. The other is in Iraq, a developing country that is torn by wars and tyrannical political systems. Based on such comparison the rising cost of education is identified as a causal agent in producing two social groups in the United States. A small, elitist group emerging as the leading force in all aspects of society and governance, and a larger under-educated group that is carrying the burden of insufficient resources and being marginalized as voiceless, nonproductive, non-competitive, and expendable segment plagued by poverty, under or unemployment, crime, and economic hardship. Based on the analyses of the educational systems in Sweden, Iraq and the United States, this paper recommends the concept of free access to education as a fundamental right of each American citizen in order to safeguard individual freedoms and assure the United States’ strength and viability in a globally competitive world.
Scranton Times Coverage of the 1906 New York State League Champions Led by Moonlight Graham
Jim Frutchey, Marywood University

Abstract
The Scranton Miners brought the first professional baseball championship to the Pennsylvania city by winning the New York State League pennant in 1906. The batting leader of the team, “Moonlight” Graham, would become an important character in baseball lore thanks to W.P. Kinsella’s fictional work Shoeless Joe. A pennant-winning season and Graham’s presence supply sufficient incentive to rediscover the 1906 Miners, but the reporters of the Scranton Times offer a deeper appreciation of the sports-minded city over a century ago. The Scranton Times continues to be the main newspaper for the city. Unfortunately, an index for the early years of the publication has yet to be created. This fact increased the time needed to complete the project. However, the apparent shortcoming led the researcher to browsing through the entirety of the newspapers during the 1906 season and gaining a broader insight to the Miners and the city they represented.
Grade inflation is recognized as a widespread phenomenon in higher education. It has been suggested that the increase in grades does not reflect an actual increase in student learning, leading to the conclusion that the higher grades represent grade inflation (Basinger, 1997). Grade inflation is most prevalent at the graduate level where grades in the A range are reported as modal (Zirkel, 1999). This phenomenon has prompted pejorative characterizations such as “A for average” (Newsweek, 1997) and the Lake Woebegone effect (“where all the children are above average”) (Zirkel, 1999).

Grading, the process of assigning evaluative symbols to student performance, was introduced in this country at Yale University in 1783 (Milton, Polio, & Eison, 1986). Grading initially took the form of descriptive adjectives such as optima, inferior etc. The letter system, currently most prevalent in graduate education, was initiated at the end of the 19th century (Milton et al., 1986).

The inflating of grades has been attributed to a confluence of factors. The Vietnam War in the 1960’s is viewed as a major contributor: “inflated grades became the moral equivalent of opposition to the war” (Healy, 2001, p. A1); students with high grades could defer the draft and avert a sentence to the jungle (Archibold, 1998). The paradigmatic shift of postmodernism with its emphasis away from an objective, rational reality to a more subjective, relative perspective has also been identified as having an influence on grade inflation. The postmodern premise of multiple truths has blurred the traditional definitive grading criteria and has thus led to higher grades (Bilimoria, 1995). The emergence of an entrepreneurial culture in higher education in which students are perceived as valued customers to be recruited, retained, and satisfied has further fueled the upward drift of grades (Basinger, 1997). Similarly, the litigious character of our society, with fear of malpractice suits, drives the actions of faculty who would rather assign an “A” than face possible grievance procedures. The link between the grade assigned students and students’ evaluation of faculty, and the impact of this evaluation on rank and tenure decisions, is yet another critical factor in explaining rising grades (Martinson, 2004). The increase in adjunct instructors, who tend toward higher grades, further exacerbates grade inflation (Barriga, Cooper, Gawelek, Butela & Johnson, 2008).
The deleterious effect of grade escalation is well documented (Stumpo, 1997). With respect to social work education, grade inflation compromises the mandated role of Programs as gatekeepers for the profession. Furthermore, overestimating academic performance in a profession that holds self-awareness as sacrosanct is paradoxical and counterproductive.

Efforts to counteract the complex issues surrounding grade inflation are beginning to emerge. Among the corrective strategies proposed include implementation of the following, singly or in combination:

- Grade compression: the most prevalent entails reduction of student performance to pass/fail (Hu, 2005).
- Grade extension: Retention of the classic A, B, C, system with the addition of plus/minus to facilitate finer gradation of performance. (Frank & Feeney, 2006).
- Prescribed quotas: designation of predetermined proportions of grades at each level to achieve a broader distribution (Edwards, 2007).
- Student Evaluations: Modification of current role to: a) discontinue student evaluations, b) diminish, or reduce to zero, the weight of evaluations in rank, tenure, salary decisions (Martinson, 2004).
- Increased Transparency of Grade Assignments by Faculty: Academic administration has access to faculty grade sheets. (Bittel, Black, Foley, Lionetti. O’Brien & Perlis (2008).
- Contextual Transcripts: Grades issued to students are contextualized to include grade in relation to class GPA (Hu, 2005).
- Capacity Building: Faculty training to enhance awareness of issues relating to grading, and minimize grade escalation (Hu, 2005).

Methodology
Using an electronic survey, the present study assessed the prevalence of grade inflation as reported by Deans and Directors of accredited Graduate Social Work Programs in the US, and what, if any, strategies are used to mitigate the problem. Respondents (N=71) selected from the strategies listed above, and added others as relevant. Queries included the strategy decision process (top-down by fiat, or collaborative stakeholder decision), perceived barriers and outcome of the effort(s).

Results
The findings suggest widespread recognition of grade inflation as a problem (61%). Concern with student evaluation of faculty performance, avoiding confrontations with dissatisfied students, and a perspective of students as consumers, were among the reasons reported to influence faculty grading. Forty-four percent of Programs (44%) are grappling with identifying strategies to redress inflated grading patterns of which 11% have a grade inflation policy in place. Increased transparency of individual faculty grade assignments was the most frequently reported initiative. Capacity building, including faculty discussions of grade inflation and possible remedial approaches also emerged as common strategy. There is a need to continue tracking grade inflation to promote the integrity of higher education and to provide students with a realistic assessment of their academic performance.
Abstract
The purpose of this study is to examine the attitudes of recent graduates of the undergraduate programs in business, accounting and entrepreneurship at a mid-size, regional university. Specific questions addressed the teaching effectiveness, level of learning, frequency of utilization and level of performance of 12 distinct content areas reflected in the curriculum. Demographic and career progression questions were also asked. Analysis includes descriptive and parametric statistics.
Abstract
The amount of electrical energy generated by photovoltaics (PV) in the Northeastern United States has been small because of the perception that using PV to off-set one’s electrical bill is uneconomical. One approach to maximize output by a PV system is to use an active solar tracking system, but this requires a level of expertise either unavailable or impractical to the average consumer. A simple design using readily available material and easily obtained public information is proposed here. Our goal will be to build a passive solar array reflector (PSAR) by installing a series of reflectors, lined with reflective Mylar, and tilted to maximize the power output by the proposed PSAR system. The tilt is calculated from data published by the Naval Observatory available via the internet. This plan will considerably reduce the cost of building commercial arrays enough to reduce the initial project investment so that the break-even point will be in 3-5 years. The solar panels will rest on urban real estate with no significant cost. Therefore, with this plan we project an increased presence of PV in the Northeastern United States due to (a) increased ease of installing a PSR system and (b) decreased break-even time.
Solar Tracker Reflector: Research and Development
Colby Haggerty and James Loven Ph.D., University of Scranton

Abstract
Photovoltaic (PV) is a major player in renewable energy sources. There have been many advances in PV, ranging from refining semiconductors within the solar modules, to lenses mounted on top of the panels. It seems obvious that a module outputs the most energy when the sun is orthogonal to the face of the panel, so the University of Scranton’s Solar Scholars have developed the concept of a module with a “mane” of reflective materials that tracks the sun’s movement to optimize the energy generated by the system. Preliminary research has shows over a 250% power increase with a crude tracking system. The goal of this project was to develop a mechanism along with a microcontroller interface that would take calculated sun positions and configure the altitude and azimuth positioning of the “Tracker Reflector”. The concept of the “Tracker Reflector” is one that would be implemented in specialized companies rather than for the consumer. It would offer vendors a solar module option with greater output efficacy. The “Tracker Reflector” can be implemented in areas less conducive to solar energy, like the north eastern and western sections of North America. The developing of “Solar Tracker Reflector” is a means to feasible PV installations in unfeasible areas.
Abstract
A group of interested faculty and students formed at The University of Scranton to devise a way to use photovoltaics to supplement the usage of electrical energy on campus. This paper discusses the process to install a 4.8kW solar panel array in an urban setting. This process began with the formation of the initial concept, array sizing, site identification, and mechanical and electrical design. We went on to secure funding and the necessary permits and licenses. Finally we contracted with vendors, integrated of crews for site preparation, mechanical construction and electrical interconnection. We focused on attaining maximum energy output, while maintaining an active learning environment for participants in safely changing the direct current produced by solar energy into the alternating current required by electrically powered devices and grid tied systems.
Abstract
Graph theory is an area of mathematics which originated in 1736 in a paper solving a recreational puzzle. In fact, many of the questions studied in graph theory originated as part of a solution of a puzzle or a game. Despite this fact, graph theory is an area of mathematics which has applications in biology, computer programming, scheduling theory, and economics, just to name a few.

One particular area of graph theory is concerned with the polynomials associated to the graph. The fundamental polynomial associated to a graph is called the Tutte polynomial (named after William Thomas Tutte, who discovered the polynomial in 1953). One specialization of the Tutte polynomial of concern is the characteristic polynomial. In addition to determining what information about the graph is contained within the characteristic polynomial, researchers are concerned with equivalent ways to determine the polynomial.

We will give the basic definitions of graph theory and introduce the characteristic polynomial. Then we will consider equivalent ways of determining this polynomial for a variety of classes of graphs, including rooted graphs, rooted directed graphs, and multiply rooted directed trees.
Multijunction High Efficiency Solar Cells, via Quantum Wells
AC Varonides Ph.D., and RA Spalletta Ph.D., University of Scranton

Abstract
Current crystalline solar cells may reach high efficiencies above 38% by means of sophisticated device designs. In this communication we explore quantum size effects due multi-layered photovoltaic (PV) structures. Such structures may be designed to absorb at selective bands of the solar spectrum (e.g. 1eV range); carrier confinement occurs at concentrations from $10^{12} - 10^{13} \text{ cm}^{-2}$ pew quantum well. Specifically, we propose a two-cell structure (a) a top bulk cell and (b) a bottom quantum well cell, tuned at specific wavelengths. The top is a three-junction cell with 28.4% predicted efficiency (AlGaAs/GaAs/GaAs); the bottom is a multijunction cell (MJ GaAs-Ge superlattice) near 22%. The synergy of the two sub-cells leads to projected efficiency values above 40% (under one sun). We show that record collection efficiencies are feasible currently and in the immediate future. Our design opens the way to highly effective solar cells via (a) triple junctions and (b) 2-dimensional electronic transport (c) flexibility in material selection.
Remote Behavioral Monitoring of the live at-Home Elderly
Implications for well being of the aged and the health care economy
Herb Hauser Ph.D., Marywood University

Abstract
The United States, like most western countries is experiencing an explosive growth in its number of elderly. It is estimated that by 2018, there will be upwards of 75 million Americans above the age of 65. In addition to being the fastest growing segment of the American population, the elderly are also living longer. The projected longevity of Americans has steadily risen for the past 4 decades and current trends suggest that by 2015 we can expect to live past 80. Both the increase in the number of aging Americans and their longer life spans pose significant challenges to how we maintain the health of our elderly as well as how we control related health care costs that continue to spiral upwards.

It is widely accepted that allowing the elderly to age in their own homes provides a foundation for both fostering elderly health wellness (as measured by quality of life and longevity) and maintaining a positive independent health financial economy.

One of the major drawbacks to aging in place relates to the development of medical disorders in the elderly that occur as a result of changes in basic behaviors such as eating, drinking, sleeping, etc. For example, an aged person who lives in their own home may stop eating for any of a number of reasons. After a few days of “abnormal” eating related behaviors the elderly person may experience significant symptoms (e.g. changes in diabetic metabolic activity) which if left untreated could cause an acute life threatening situation which requires an emergency room visit and/or extended in-patient hospitalization.

Such emergency room admissions and subsequent inpatient treatments are both expensive and provide reasons for why this particular aging individual should not be allowed to age in place. The insecurity and anxiety associated with aging in place experienced by children and family as well as the expensive interventions performed during the emergency room/ hospitalization treatment of the acute medical disorder could be avoided if the core behaviors of the elderly are monitored. Behavioral monitoring establishes the normal baseline of food intake behaviors and any anomalies to the normal behavior patterns may be interpreted as being indications that “something is wrong”. Once communicated to the health care partner of the aging in place elderly an appropriate intervention can be performed. Interventions can range from a call from a family member designed to “check in with the elderly” to a physical visit by a nurse practitioner who will assess the causes and seriousness of the change in eating behavior.
The Marywood -Ball State Universities Remote Elderly Monitoring System (REMS) collaboration is currently developing and testing technology-based eating and water intake related behavior sensors that will enable us to monitor these key core behaviors in a wireless, non-invasive, non-interactive, ultra inexpensive and completely seamless manner. The water behavior sensor is being designed so as to discriminate between water usage related to drinking, washing dishes and cooking foods.

Similarly the food behavior sensors are designed so as to discriminate between kitchen cabinet door opening, pantry door opening and refrigerator opening. The sensors are completely wireless and use nanotechnology and or advanced microintegration. Data collected wirelessly in the home are transmitted via the Internet to remote servers at Ball State University where they are subjected to software algorithms. These algorithms establish the presence of anomalous behavior which subsequently initiates a program of early intervention. The aging in place elder does not have to do anything except live normally in their home in order for the data to be collected. The system does not use invasive recording/recording devices such as cameras.

Early studies have revealed that this method of monitoring core behaviors has both validity and reliability. In addition to monitoring food and water intake related behaviors we are also beginning a design phase for two new sensors. Phase II sensors are designed to wirelessly monitor the sleep profile and the preference for color light of the aging in place elderly. There is evidence to suggest that disturbances in sleep patterns are associated with certain types of dementia and a number of medical pathologies. A second sensor that we are currently working on monitors the self-selection of light hue (color) and brightness (Intensity) by the live at home elderly. We believe that changes in selection profiles of light may indicate that the aged individual is not feeling well (similar to how people who are sick in bed prefer dark rooms to bright rooms). It is anticipated that like water and food related intake behaviors, these behaviors, light hue/brightness self selection and sleep pattern profiles will provide us with leading edge indicators of potential health problems.

These leading edge health indicators will allow for early intervention by the health care partner (child, family, and neighbor, health care professional) in order to minimize the possibility of emergency care and hospitalization. Finally, we also believe that these systems will promote the concept that the longer an aging person can stay in their own home, the better the quality of life and the stronger the personal health economy of the individual.
Abstract
In addition to providing an oral presentation, I would be interested in providing information about Marywood University’s recently developed Attention Disorders Clinic to attendees at the Symposium. If available, a table on which a display and brochures could be placed would be appreciated.

Scope of the Problem:
Attention-Deficit/Hyperactivity Disorder affects approximately 5% of Americans, with an estimated 2,150,000 school-aged children suffering from this disorder. Although effective treatments have been developed for use in clinical practice, a disconnect between parents, educators, and health care providers has been cited as a significant impediment to the initiation of care for these children (NIH Consensus Statement, 1998). Without effective care, these children and teenagers are at substantial risk to develop significant functional problems at school and in their communities. A conservative estimate of the health care, education, and juvenile justice costs of this illness (COI) is $14,576.00 per child (2005 U.S. Dollars; Pelham, Foster, & Robb, 2007), approximately twice the cost for a child without ADHD. This translates to an annual cost of approximately $42.5 billion, which is similar to the annual COI for conditions like depression ($44 billion) and stroke ($53.6 billion).

Despite the amount of financial resources directed at treating children and adolescents with ADHD, there is mounting evidence that the current process for identifying and treating patients with this disorder is not effective. Examination of treatment initiation and retention rates have indicated that only 25-50% of parents will initiate and continue treatment for children diagnosed with ADHD (Costello et al, 1996; Monastra, 2005). The primary reason cited by parents was discomfort with the initiation of medication for ADHD without direct testing of attention. Although at this time, reliable, valid procedures for testing attention have been developed, early childhood screening of attentional abilities is not included as part of the pre-kindergarten process or during “well-child” visits in physician’s offices, despite evidence that ADHD is far more common than other problems that are routinely screened (e.g. vision; hearing).

In addition to low treatment initiation and retention rates, the result of a recently published, longitudinal study indicates minimal gains in academic achievement even in those children who are treated with stimulant medication and receive special education services. Scheffler et al (2009) reported gains of approximately 2 months (mathematics) and 3 months (reading) in 594 children over a six month period, leading the researchers to conclude that “these gains are insufficient to eliminate the test-score gap between children with attention-deficit/hyperactivity disorder and those without the disorder.”
Another longitudinal study (Molina et al, 2009) examined the long term effects of a 14 month treatment program for 436 children with ADHD funded by the NIH (MTA Cooperative Group, 1999). The results of this study indicated that a time-limited “effective” intervention was insufficient to yield any significant long term effects on the functioning of patients with ADHD. As reviewed by Monastra (2007) without early identification and sustained, effective treatment, these children are at increased risk to require a range of services in educational, psychiatric, and criminal justice settings that greatly increases the overall COI.

Collectively, research findings indicate that the current process for identification and treatment of children and adolescents with ADHD is contributing to a low rate of diagnosis and treatment and an insufficient level of treatment response. A disconnection among care providers has been cited as a significant impediment to the type of ongoing collaboration among parents, educators and health care providers that seems needed in order to develop an identification and intervention model that can improve treatment initiation, retention, and promote improved academic and social development. The mission of Task Force on the Early Identification and Treatment of ADHD is to provide information that can assist in the development of a cost-effective, early identification process, and a model for overcoming the disconnect among those individuals responsible for the care of students with ADHD.

Initial Phase of the Study:
During the initial six months of the study, a survey was developed in order to assess the types of problems that are being insufficiently treated and the factors impeding comprehensive care. This survey was administered to a group of 324 parents, educators, physicians, and mental health care providers who attended a workshop entitled Bringing Out the Best in Students with ADHD conducted in Elmira, NY (Monastra, 2009).

The primary findings of the survey were as follows:
1. Despite the availability of effective pharmacological, psychological, and educational care in their communities, all of the respondents indicated that multiple, significant psychiatric, educational, and developmental problems continued to be evident in children. Among the problems most commonly cited were impairments of attention and mood control, deficits in reading, writing, and mathematical abilities, disorganization and difficulty completing homework assignments independently.

2. Recognizing that effective care was available in their communities, the respondents were surveyed regarding their perspectives on the factors contributing to the insufficient intervention. Again, all of the respondents reported an awareness of multiple impediments. Among the factors most commonly cited were insufficient communication between healthcare providers and teachers, failure to evaluate and rule-out other medical problems that can cause “ADHD” symptoms, parent-school disagreement regarding diagnosis, denial of services at school, and lack of knowledge about ADHD by parents and teachers.

3. In an effort to initially assess support for early identification of attention deficits by school districts, respondents were asked to indicate whether they were supportive of the development of a process for attention screening at schools, similar to the type of approach used to screen visual and hearing problems. Of the 324 respondents, 298 (92%) were supportive of such an initiative. No significant differences in level of support for such an initiative was noted between parents, educators, physicians and mental health care providers.
Phase 2 of the Study (In Process)

The second phase of the Task Force Project involved the development of a panel of experts in the fields of education, medicine, psychology, and associated disciplines specializing in the care of children with neurodevelopmental disorders. At present, a multi-disciplinary group of faculty members from Marywood University serves as the core of the Task Force and has begun to review initial survey findings. During the second phase of the project, the Task Force will seek to distribute the survey to Northeastern Pennsylvania School Districts, physicians, and mental health care providers, analyze findings, and generate an early identification and intervention model. This model will be shared with those individuals who completed the survey, and revised based on their feedback.

The third phase of the project will consist of field testing of the models developed in order to assess impact of early identification and intervention on child psychiatric status, educational development, and community adjustment.
Taubman/Golandsky Approach to the Violin  
Sophie Till, Marywood University

Abstract
Marywood Assistant Professor of Violin, Sophie Till, has undertaken ground-breaking work in violin technique and pedagogy through her development of the Taubman/Golandsky Approach to the Violin. Marywood University has become the center for this new approach and is receiving national recognition for it, most recently in the ASTA String Project of the Year Award. The Taubman Piano Technique was developed by Dorothy Taubman decades ago and is internationally known. Ms Taubman’s genius was her ability to analyze the minute and often invisible movements that underlie a virtuoso piano technique. Furthermore, she was able to understand how these movements interact and serve the demands of musical expression at the keyboard. This has become an internationally recognized piano technique and pedagogical method. The Taubman Piano Technique is perhaps most famous for its ability to help solve piano-related injuries, including crippling cases deemed otherwise incurable such as focal dystonia.

Sophie Till’s work is innovative for two reasons: First, she is the first person to take these minute movements and undertake the comprehensive translation of them onto another instrument, from piano to violin. She has worked for three years with the world’s leading Taubman exponent, Edna Golandsky and the Golandsky Institute, NY to do this. While the laws governing the body’s movements are the same, the geography of the violin and piano are very different. This translation is a major piece of work and an on-going project. Second, Sophie has developed the Taubman work on the violin as a pedagogical method. Marywood is the center for this new pedagogy and it is being taught from 5 year old beginners to undergraduate level students.

The importance of this work for violinists lies in the cultural heritage of violin technique and teaching. An alarmingly high percentage of violinists are in pain, play in discomfort, lose their jobs due to injury or simply suffer limitations in their playing. The Taubman work provides a body of knowledge that solves these problems. Traditional approaches often offer solutions that exacerbate such problems, or actually cause them. There is no other body of knowledge in the field that can answer such questions with the degree of clarity, analytical accuracy and comprehensivity as this new approach. It is not an exaggeration so say that with careful development and dissemination, this new approach can revolutionize violin playing and teaching.

Following an explanation of the background to this new work, the presentation would explain some of the main physical concepts of the approach such as forearm rotations, in and out movements, bow arm and torso relationships. They would be presented in a way that a non-musician and non-violinist can experience them enough to have a glimpse into this world of minute motions. The presentation would therefore allow everyone to access the experience of physical logic that the Taubman approach offers, versus other traditional teaching methods.
Business Incubators and Regional Economic Development: A Continuing Search for Impacts
John M Sumansky Ph.D. Professor of Business, Misericordia University
William desRosiers M.B.A. Candidate, Misericordia University

Abstract
Business Incubators have been around at least in nascent form since the early 1950's, although there is strong evidence that the incubators of today were really not in place until the 1970's. [2] [8]. According to the National Business Incubator Association in the Survey of Business Incubators in 1997 reported 1,000 members representing about 600 different incubation programs. [1] Interestingly enough, reports on business incubators around the world suggest that of all firms ever incubated somewhere between 60 and 90 percent of them are still in existence.

Communities around the nation have embraced business incubators in the hope that they would produce economic development and job growth mostly through the mechanism of entrepreneurship and new business development. However, there is some evidence that incubators have begun to fall out of favor as engines of regional economic growth. A survey of local economic development officials, revealed that when local officials were asked to rank different economic development policies, business incubators fell into the group of strategies listed as "ineffective". [4, p. 102]

The purpose of this paper is to explore the question “Do incubators make a difference to regional economic growth?”

Definition of a Business Incubator
A business incubator is defined as a facility established to nurture young (start-up) firms during their early months or years. Incubators usually provide affordable space, shared offices and services, hands-on management training, marketing and legal support and often access to financing. Incubator clients typically spend a period of two to three years in the incubator before they "graduate" and leave to permanent locations. Others who do not survive are asked to leave. [5, p.1]

Incubators have developed in ways that favor high tech start-ups, mostly because of the widely held belief that future growth in high tech sectors is the most likely source for regional economic growth [1, p.4]. Many communities, often the victims of decline in manufacturing looked to growth in high-tech as freeing them from reliance of dwindling natural and local resources [9]. The very nature of high tech sector gave hope to any region that it too could partake of growth by tapping into projected growth in high-tech [2, p.5].

Incubators have evolved into five different forms: 51% were nonprofit, 27% were affiliated with higher education, 16 percent were hybrids involving cooperation among nonprofits, governments and private developers, 8% operated under the aegis of private entities and 5% fell into an others category that includes sponsorship by arts organizations, private industry councils and chambers of commerce. [5, p.2]
Incubators and economic growth: what the research is saying

Significant changes in the arguments for incubators as engines for regional growth are seen starting around 1989. Local public officials increasingly used incubators’ potential for job growth as a rationale for public funding in the forms of tax breaks and cash incentives. Prior to this time many regions were engaged more in ‘smokestack chasing’. [4, p. 83] Before 1989, 18.5% of local areas identified incubators as a critical feature of the economic development strategy. By 1996 the percentage had grown to 45.1%. [4, p. 84]

There is little macro-type evidence on the macro impacts of incubators on a community’s economic development. [10, p.19; 6, p. 68]. The research on the effectiveness of business incubators mostly has focused mostly on the managerial performance and effectiveness of individual incubators in promoting the growth of start-up enterprises. Measures of incubator effectiveness tend to be more along the lines of micro-type measures (survival rates and job growth in incubated firms) as opposed to measures regional impacts on economic growth, employment and incomes. [1, p. 119] Research on the contributions of incubators to region-wide economic growth is nonexistent. Perhaps the most positive report on incubators’ impacts is found in the following statement “ incubators are better (more cost effective) at creating jobs than are programs to attract firms into a region.” [5, p.68]

One major study produced by the US Department of Commerce, Technology Administration (USDC) and the National Business Incubator Association (NBIA) USDC/NBIA] reported the finding that there was “no strong statistical relationship between incubators ...and ... sales and revenue growth” among high tech incubator clients. [1, p.32] Based on this conclusion, it is easy to extend the argument and report that if individual incubator client sales and growth is non-significant at the micro level so too must job growth in the regions which are home to these firms.

Absent macro evidence of impacts, several reasons have been offered to explain this absence of evidence on region-wide incubator impacts

Time. The USDC/NBIA study referred to earlier reports that there appear to be secondary (indirect) benefits to client companies in terms of their use of things like equity investments, patents, licensing, etc. Enhanced access to such programs and services are precursors to sales and job growth. If so, then clients may avail themselves of services that could enhance their growth in the region long after their affiliation with an incubator. In short, perhaps the time period to observe region wide impacts has not been long enough to allow the total impacts to work their way through the system

Impact measures. Searching for incubator impacts at the macro level by using changes in total regional employment may be too harsh a test of incubator macro impacts. Most incubators have evolved with a high tech, technology transfer foci. If there are macro regional impacts hey are more likely they will show up in growth in employment in a region's high tech sectors.

Context. The USDC/NBIA study also acknowledged that future research into the employment and jobs impact of incubators would require consideration of the larger context in which these programs operate, i.e., regional economies, linkages among organizations and local cultures.

Do Incubators Matter?
This research focuses on the macro, region wide impacts of business incubators on regional employment and other macro-type variables. Two questions are explored:
1. Do regions that have incubators have measurably different economic/development characteristics than those regions that do not host business incubators and
2. If these differences are accounted for, do incubators have a statistically significant effect on either economic development?

It is a cross-section study covering 175 regions (MSAs). As suggested in the prior research, independent variables are devised to hold constant across regions certain "cultural" factors and other socio-economic characteristics. This study used a recent report which appeared in FORBES magazine as the base for selecting the MSAs in this study. 175 MSAs were ranked by FORBES according to the cost of doing business, prospect for job growth, educational attainment and absolute population levels.

Descriptive Characteristics of regions with and without incubators:

The incubator variables were used to classify MSAs into “haves” and “have-nots” and then each category was examined for statistically significant differences in seven characteristics

1. Forbes cost of doing business rankings,
2. Forbes job growth rankings,
3. Forbes education attainment rankings,
4. Absolute population
5. Total education employment (NAICS 6113).
6. Small form employment levels
7. Changes in location quotients in regions' high tech sectors

The means for each variable were compared between the MSAs that had incubators to the means for each variable in MSAs that had none. For the 175 MSAs used in this analysis 97 had incubators and 78 MSAs had none. Of the 97 MSAs with incubators, 33 MSAs had multiple incubators. The comparison was then tested for statistical significance using a t-test. The results are contained in the table below.

<table>
<thead>
<tr>
<th>CONTROL VARIABLES</th>
<th>MSA with incubators mean (s.d.)</th>
<th>MSA without incubators mean (s.d.)</th>
<th>statistical differences between means</th>
<th>t value</th>
<th>significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of doing business rank</td>
<td>97.24 (0.48)</td>
<td>95.35 (54.83)</td>
<td>.2237</td>
<td>.2237</td>
<td>0.82</td>
</tr>
<tr>
<td>Job growth rank</td>
<td>101.43 (60.35)</td>
<td>98.12 (56.54)</td>
<td>.3709</td>
<td>.3709</td>
<td>0.71</td>
</tr>
<tr>
<td>Educational attainment rank</td>
<td>93.01 (55.38)</td>
<td>119.88 (56.35)</td>
<td>3.179</td>
<td>3.179</td>
<td>0.0018*</td>
</tr>
<tr>
<td>MSA population (thousands)</td>
<td>1400.00 (1875.43)</td>
<td>758.72 (962.5)</td>
<td>2.790</td>
<td>2.790</td>
<td>0.0059*</td>
</tr>
<tr>
<td>Education employment</td>
<td>10,462 (21,566)</td>
<td>3,107 (4557.0)</td>
<td>2.958</td>
<td>2.958</td>
<td>0.0035*</td>
</tr>
<tr>
<td>Small firm payrolls (millions $)</td>
<td>4.4637 (8.7545)</td>
<td>1.7624 (2.5792)</td>
<td>2.633</td>
<td>2.633</td>
<td>0.0092*</td>
</tr>
<tr>
<td>location quotients high tech index</td>
<td>101.297 (3.6655)</td>
<td>100.82 (2.7580)</td>
<td>0.953</td>
<td>0.953</td>
<td>0.3417</td>
</tr>
</tbody>
</table>

Table 1. Comparison of means for seven characteristics of MSAs with and without incubators.

The data in Table 1 above show statistical differences in means (t-test) associated with the presence of incubators reveal several interesting points. There appear to be no statistically significant differences between MSAs with incubators and those without in terms of the cost of doing business, job growth potential rank and location quotient differences. See below for a more extensive
discussion of location quotients. On the other hand, the presence of incubators appears to be more associated with educational attainment rank, population, employment levels in higher education and small firm payrolls.

Table 1 is at least suggestive that regions with incubators differ significantly from those without incubators in a number of ways. In general, MSAs are more likely to be found in

• MSAs with larger population levels
• MSAs with higher educational attainment
• MSAs with more employment in the higher education sector
MSAs more robust small firm sector

Causal relationships between economic performance and incubators
If we isolate the effects of incubators by statistically accounting for these regional differences, is there a statistically significant contribution of incubators to economic growth? Two models are developed to test the statistical significance of incubators and macro regional economic performance. The models differ in terms of the dependent variable. As suggested earlier, prior research either did not measure macro factors at all or some placed too harsh a test on incubators in expecting incubators to impact general employment levels. In the models specified below two new dependent variables are developed and tested: Model 1. Employs changes in location quotients in the high tech sectors in 175 MSAs as the dependent variable. Model 2. employs 2008 payroll totals in small firms in 175 MSAs. The general hypotheses for both is that if incubators have a macro impact they are most likely to show up in either the high tech sectors or more generally in small firm employment. This reasoning stems for them very nature of incubators: the majority have focused on high tech businesses and most focus on start-up, entrepreneurial enterprises.

Model 1. The location quotient dependent variable model.
A still useful and relatively easy way to measure economic development impacts is to examine location quotients in a region which produce estimates of the region's economic base; i.e., that portion of a region's business sector that exports its goods or services outside the region because it employs a disproportionately (LQ>1) larger number of people when compared to some larger comparison geographic area such as a state or the nation. According to one economic development web site,

"Establishing an economic base should be the goal of your municipal economic development program. Or the economic development division of your chamber of commerce. Even a neighborhood can generate community exports--items that people primarily outside of your community will purchase. Instead of recycling the same money over and over again, your city, town, or neighborhood gains new money through employment." [11]

Location Quotients (LQs) are ratios that allow an area's distribution of employment by industry to be compared to a reference or base area's distribution. The reference area is usually the U.S., but it can also be a state or a metropolitan area. The reference or base industry is usually the all industry total. If an LQ is equal to 1, then the industry has the same share of its area employment as it does in the reference area. An LQ greater than 1 indicates an industry with a greater share of the local area employment than is the case in the reference area. For example (assuming the U.S. as the reference area), Las Vegas will have an LQ greater than 1 in the Leisure and Hospitality industry because this industry makes up a larger share of the Las Vegas employment total than it does for the country as a whole. LQs are calculated by first, dividing local industry employment by the all industry total of local employment. Second, reference area industry employment is divided by the all industry total for the reference area. Finally, the local ratio is divided by the reference area ratio.
In this study changes in LQs are used as the dependent variable for several reasons. 1. LQs enable a focus on measures that are directly related to growth, the higher the LQ the more likely the region in question is to be exporting production and thus contributing to growth beyond what might be expected by population size alone. 2. Changes in absolute size of employment would bias the data in favor of larger MSAs. LQs account for a size differences effects across regions and 3. Any positive increase in a region’s LQ will represent progress - movement in a direction consistent with regional progress.

Another important approach in this study is to focus on LQs in the high-tech sectors in each of the MSAs. If most incubators have focused on growth in high-tech businesses, then it should be expected that any benefits from incubators should show up first in high tech sectors. For this study, the definitions of high-tech published by the American Electronics Association are relied upon. [7]

\[
LQ = \left( \sum_{i,j,t} LQ_{i,j,t+7} - \sum_{i,j,t} LQ_{i,j,t} \right) + 100
\]

((Location quotient* in high tech sector i, region j time t minus ( location quotient in high tech sector i, region j, time t+6)) + 100. The base is the state in which the MSA is located. The high tech sector is defined by the following NAICS groupings using definitions of high-tech as published by the American Electronics Association [7].

\[i = \text{Computer and peripheral equipment (33411), Electronic components (33411), Measuring and control instruments (33451), telecommunications (51711), Internet services (51811 and 51812), Computer systems design (54151) and R and D labs (5417 and 5413)}\]

\[j = 175 \text{ Metropolitan Statistical Areas (MSA) for which FORBES indexes are available (http://www.forbes.com/lists/2009 ) [3]}\]

\[t = \text{Year 2001}\]

The dependent variable is constructed by measuring changes in location quotients over the period 2001-2008 rather than using absolute changes in employment levels in targeted high tech sectors across selected regions.

**Model 2.**
Model 2 employees the absolute size of payrolls in smaller sized firms in 175 FORBES MSAs. This dependent variable attempts to measure the impact of incubators on size of the entrepreneurial sectors as measured by payrolls in small firms for all sectors across MSAs. The hypothesis is that if incubators have an impact, other things equal, then we should see more robust levels of payrolls in small business sectors in MSAs with incubators than in those without incubators.

**Dependent Variable (definition)**
SMP = Small firm (employment less than 20 employees) payrolls in dollars [12]

**Independent variables**
Both models employ a common set of independent variables to isolate the effects of incubators.
C = Cost of doing business rank 1-175 (FORBES)
E = Educational attainment rank 1-175 (Forbes)
EE = Total payrolls in education sector (NAICS 6113) in 175 MSA
MI = Dummy variable. 1= presence of multiple business incubators
RD = Research and Development growth index
CS = Computer services growth index
JG = Job growth potential rank (FORBES)

Model Estimations

LQ_{ij} = f (P, MI, RD, CS, error)

Model 1. Dependent variable: Location quotient change index

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>b</th>
<th>b standardized</th>
<th>t value</th>
<th>significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-192.92</td>
<td>----</td>
<td>-4.721</td>
<td>.000</td>
</tr>
<tr>
<td>Population MSA</td>
<td>.000</td>
<td>0.144</td>
<td>2.173</td>
<td>.031</td>
</tr>
<tr>
<td>Multiple incubators</td>
<td>1.420</td>
<td>0.169</td>
<td>2.570</td>
<td>.011</td>
</tr>
<tr>
<td>RandDchangeindex</td>
<td>1.742</td>
<td>0.268</td>
<td>4.472</td>
<td>.000</td>
</tr>
<tr>
<td>Computerchangeindex</td>
<td>1.190</td>
<td>0.493</td>
<td>8.113</td>
<td>.000</td>
</tr>
</tbody>
</table>

R square = 0.378
Regression equation:  F = 27.4       Significance level = 0.000

Summary Model 1.
The multiple incubator dummy is significant at the 0.03 level indicating that when other effects are held constant, the relative contribution of incubators to LQ growth is positive and significant. Incubators appear to make a statistically significant contribution to increases in the high tech sector as measured by location quotients. A region's high tech sector location quotient is advanced by 1.42 points other things equal.

It must be noted that a dummy variable for MSAs that had “one incubator only” statistically never entered into the estimation. The conclusion that one draws for this is that to be successful in raising high tech sector location quotients, MSAs benefit from having more than one incubator.

All variables have the expected signs. Larger population MSAs are more likely to be associated with higher location quotients for the high tech sector. That is, other things equal. high tech sector employment as a percent of MSA employment grows relative to high tech sector growth in the MSAs respective state as a whole.

The correlation coefficient (R^2) of .378 suggests that a number of variables may be missing and more research is required to more fully explain the variation in high tech sector increases.
Model 2. Dependent variable: Small firm total payrolls

\[ SMP = f(P, MI, LFP, JG, E, e) \]

R squared - .978

Regression equation: F value = 1535.01     Significance level = 0.000

<table>
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Model 2. Summary

Model 2. with an $R^2$ of .978 suggests that nearly all the variation in small firm payroll totals is explained by the total of independent variables in this model. All independent variables are significant at the 0.056 level or above.

Most important is when the effects of population, large firm payrolls, job growth potential, and educational attainment are subtracted, incubators are not a significant factor in payroll growth among small firms. This finding is consistent with prior research which indicated negligible impacts of incubators on across-the-board employment.

Analysis

Examination of the results obtained for the two models suggests a few things regarding the macroeconomic impacts of incubators.

1. Incubators appear to have a positive impact of an important measure of regional economic development - location quotients. As was suggested in the descriptive data in table 1, high tech sector location quotients are higher for MSA with multiple indicators than they are in MSAs without incubators. As seen in Table 1, on average, location quotients for the high tech sectors increase in MSAs with and without incubators between 2001 and 2008. However, the location quotients for the high tech sectors in incubator MSAs is 1.297 compared to 0.82 points for MSAs without incubators. This model provides support for the contention that it is the existence of multiple incubators that explains this difference in means between the two categories of MSAs.

Once other regional factors are accounted for through the regression, the positive relationship between incubators MSAs and location quotient improvement holds up statistically.
2. In numerous preliminary analysis, a dummy variable for MSAs with only one incubator proved to be statistically non significant. Apparently, to have an impact a region needs more than one incubator, other things equal.

3. Despite the positive results for the impact of incubators, no significant impacts for incubators could be found on size of payrolls in smaller firms. This suggests that the impacts of incubators - as has been suggested in other research do not show up in traditional macro variables. Perhaps expecting incubators to have significant across-the-board employment and income impacts is too much to expect from incubators whose benefits may best be measured in the specific high tech sectors which most have been created to pursue.

4. These conclusions suggest that from a political perspective, incubators should not seek to find public support based on promises to greatly expand a region's jobs and incomes. The impacts are likely to be less dramatic and incubator proponents put themselves in political jeopardy if their potential benefits are misrepresented.

5. To a certain extent, incubators are more an artifact of the general economic climate and size of a region. They appear to an ingredient in a mix of factors that influence especially growth in smaller enterprises.

6. The apparent contradiction of results between the two models may not be a contradiction at all. It is possible because of the way in which location quotients are constructed. Location quotients can increase with expansion among existing larger firms moving them from producing for local markets to positions producing more for export and therefore contributing to growth. More research need to explore this fact in more detail.
REFERENCES


Abstract
This paper analyzes the necessary elements for implementing social media best practices into the classroom. It is designed for administration and faculty within the educational community that are dedicated to a technology-enriched experience for their students. It begins by explaining the need for focusing on social media integration through the thoughts and attitudes of 16 “digital natives” on YouTube. It further identifies three objectives that are necessary to foster social media integration into student instruction, curriculum development, assessment and record keeping all designed to increase student learning outcomes. The paper explores relevant reference material and statistics that relate to teacher use of technology and reports standard guidelines from the International Society for Technology in Education (ISTE). It further explains how professional development is required and a necessary role of the school district administration. Finally, it examines some implications for adapting authentic learning experiences into the classroom, provides resources for student engagement and a suggested framework for implementation. The rationale for this paper is also supported through current trends, research and references that align with the overall goals and objectives of a comprehensive social media effort that seeks to prioritize greater student learning outcomes.
Abstract
The purpose of the presentation is to analyze the accounting industry within Northeastern Pennsylvania over the past approximately twenty years. By comparing two surveys, and by placing them against the backdrop of national data, differences can be presented to demonstrate how the industry is dramatically changing.

The 1991 Survey
In 1991, a survey was administered to examine the state of the accounting profession in Northeastern Pennsylvania. This survey, prepared in part by one of the authors of the current study, was distributed to accountants employed in public and private accounting in several counties in Northeastern Pennsylvania. One hundred forty three responses were completed, of which one hundred twenty three (86%) came from the three counties of Luzerne (90 responses), Lackawanna (23 responses), and Monroe (10 responses). Of those responding to the survey, 47% practiced in the area of taxes, 19% in the area of compilations and/or reviews, and 17% in the area of auditing. With respect to professional designation, 72% surveyed were CPAs. Also, 78% of the respondents were male and 22% female. The average age was 42 (males were 44 and females 35). Based on the results of this 1991 survey, several observations were made.

Observation One: Salary Was Impacted by Several Variables in 1991
Accountant salaries for the region were apparently influenced by several factors, including, sex, certification, and the accountant’s position in the firm. Several national studies were compared to the study to determine the extent to which the 1991 survey was consistent with national averages. It was conjectured that the differences between the survey results and national averages were due to the small size of the sample of Pennsylvania accountants, namely those who practice generally in the northeastern region of the state.

Observation Two: Salary Was Impacted by Sex in 1991
Nearly three-fourths of all males reported earning more than $35,000 per year; less than one-third of all females placed themselves above this mark. Indeed, while only one of sixteen males earned less than $15,000 per year, almost one of five females fell into this latter category.

Of course, the authors recognized that sex bias may be only one of many causes for this phenomenon, but the findings at least suggested cause for concern. The difference in earnings with respect to sex in the study were generally consistent with national averages for the accounting profession where data at the time showed that males earned an average of $51,000 per year while fe-
Observation Three: Salary Was Impacted by Certification in 1991
The designation “Certified Public Accountant” seemed to be extremely important in salary considerations. Indeed, three-fourths of CPAs reported earning more than $35,000 per year and 93% reported earning more than $25,000 per year. For non-CPAs, however, 62% reported earning less than $25,000 per year and 69% reported earning less than $35,000 per year.

The staggering difference in this area was even greater than the difference demonstrated in national averages, where CPAs earned an average of $54,000 per year and non-CPAs, $46,000 per year.

Observation Four: Salary Was Impacted by Position in the Firm in 1991
It was also determined that the accountant’s position in the firm played an important role in salary structure. As seen in the data, partners earned the highest salaries, with 42% earning more than $90,000 per year and 91% earning more than $35,000 per year. By contrast, managers tended to cluster in next highest categories, with 82% earning between $25,000 and $70,000 per year. Supervisors were next, with 85% earning between $15,000 and $50,000 per year. Staff accountants were lowest, with 83% earning less than $35,000 per year.

Again, by way of comparison, data from national averages suggested that top managers earned $69,000; middle managers $49,000; and entry level persons, $33,000 per year.

The 2009 Survey
To determine if the accounting profession had changed within the past twenty or so years, a similar survey was distributed to approximately two hundred accountants employed in the accounting industry in several counties in Northeastern Pennsylvania at a tax clinic held in Wilkes-Barre, Pennsylvania. One hundred seventeen responses were returned, of which seventy eight (67%) came from the two counties of Luzerne (49 responses) and Lackawanna (29 responses). Of those responding to the survey, 60% indicated they practiced in the area of taxes, 14% in the area of public accounting and external auditing, and 13% in the area of controllership and corporate financial oversight. With respect to professional designation, by far the majority were CPAs (67%). 54% of the respondents were male and 46% female. The average age was 53 (males were 57 and females 49). 58% of respondents held a four year college degree as their highest earned degree.

After analyzing the data and comparing the information to the results from 1991, three conclusions are now reached.

Conclusion One: Females Represent a Much Greater Proportion of the Industry in 2009
The 2009 survey demonstrates that there are a greater number of females than males in the profession, as compared to the 1991 survey. In 2009, 54% of the respondents were male and 46% were female; in 1991, 78% of the respondents were male and 22% were female.

Conclusion Two: Accountants are Getting Older
The second conclusion that can be drawn is that the accountants in Northeastern Pennsylvania are getting older. The average age from the 2009 survey was 53.4, with 56.8 being the average age for males and 49.1 being the average for females. These data can be compared to an average age of 42.2 in 1991, with the average age being 44.3 for males and 34.7 for females.
Also, in 2009, over 75% of the respondents have over 20 years of experience. This can be compared to only 60% having over ten years of experience in the survey completed nearly twenty years ago. Regardless of age and years of experience, it is interesting to note that most individuals stay with their same employers. In the 2009 survey, 93% have worked for fewer than five different firms, and 90% in the 1991 survey have worked for three or fewer firms.

Conclusion Three: Salary Remains Dependent upon Sex and Certification

By comparing the 1991 survey to the 2009 one, one can observe that female salaries are still lower than their male counterparts. The weighted average in 2009 was $92,843.14 for males, compared to only $54,897.96 for females. The 1991 survey showed $55,312.50 as the weighted average for males and $28,870.97 for females. It is essential, however, to consider that the average age of males is currently 7.7 years more than for the female survey respondents. Similarly, the survey depicts that the weighted average for CPAs is $82,835.82, while the weighted average for non-CPAs is only $56,818.18. Interestingly, these averages both exceed national data, for which the average salary for a CPA is $73,418 and only $52,513 for individuals who do not hold the CPA.
An Examination of the Relationship Among Perceived Infrastructure, Perceived Business Climate, Perceived Workforce, and Business Growth in Northeastern Pennsylvania
Scott J. Weiland, Ph.D., Alan M. Levine Ph.D., Gale A. Jaeger, Ph.D., Marywood University; Sherry S. Strain Ph.D., Keystone College

Abstract
The purpose of this secondary analysis was to examine the relationship among perceived infrastructure, perceived business climate, perceived workforce, and business growth. The research question was: What is the relationship among perceived infrastructure, perceived business climate, perceived workforce, and business growth? Methods: The study utilized a quantitative approach for a secondary analysis of the Pennsylvania Department of Community and Economic Development (DCED) Business Retention and Expansion Program (BREP). Four variables were included: perceived infrastructure, perceived business climate, perceived workforce, and business growth. The sample consisted of 1,802 companies from northeastern Pennsylvania. Data from July 1, 2004 to February 28, 2007 was selected. Spearman’s rho was used to test the hypotheses, and logistic regression analysis was also used to determine if perceived infrastructure, perceived business climate, or perceived workforce predict business growth. Results: For the relationship between perceived infrastructure and business growth, an extremely weak correlation that was not significant was found ($r (1289) = .045$, $p > .05$); for the relationship between perceived business climate and business growth, a weak positive correlation was found ($r (1289) = .115$, $p < .001$), indicating a significant relationship between the two variables; for the relationship between perceived workforce and business growth, an extremely weak correlation that was not significant was found ($r (1289) = -.010$, $p > .05$). Conclusion: To gain a competitive advantage in the global economic development competition, a reframed quantitative analysis of the northeastern Pennsylvania’s assets, especially its workforce, infrastructure, and business climate must be conducted to gain a better understanding of the community’s assets and growth potential.
Abstract
The elusive nature of mindfulness makes development of a precise operational definition difficult. The fundamental purpose was to examine if individuals are aware of what constitutes mindfulness by assessing when they believe they experience mindfulness and what behaviors they elicit when experiencing this state of consciousness. Participants were presented with a brief definition of mindfulness and asked to describe three situations when they behaved in a mindful way. In short, the definition stated that “Being mindful includes being fully aware of and attentive to their environment. It is accepting, in a non-judgmental way, situations that one may encounter.” Qualitative analysis of results indicates that the descriptions provided by participants of the current study further validate the many working definitions developed by mindfulness researchers. Specifically, novelty (e.g., reactions to novel/difficult situations) and motivation (e.g., job responsibilities and recreation) emerged as salient factors descriptive of mindful experiences. While meditation is most often suggested as a means to achieving a mindful state, the discipline necessary to cultivate a practice is often a barrier for some. This research assists in expanding ways in which individuals can achieve this beneficial state that are familiar and easily accessible to a general population.
The Influence of Musical Training on the Phonological Loop and the Central Executive
Vijayachandra Ramachandra Ph.D., Colleen Meighan, Jillian Gradzki, Marywood University

Abstract
Several research studies indicate that musical training leads to cortical reorganization, which may extend to areas, not directly concerned with music-related functions. More recently, Franklin et al. (2008) showed a positive effect of musical training on both long-term verbal memory and verbal working memory. The current study compared the effects of musical training on the phonological loop and the central executive components of Baddeley’s working memory model (Baddeley & Hitch, 1974). Thirty-nine healthy undergraduate students (19 musicians and 20 non-musicians) between the ages of 18 and 25 years participated in this study. All participants were administered tasks of phonological memory (nonword repetition and digit span), and central executive (the reading span test and backward digit span). A one-way ANOVA revealed that musicians performed better than non-musicians on both phonological memory and central executive tasks (p< 0.05). The findings here indicate that musical training can have positive effects on not just domain-specific phonological memory tasks but also on more domain general cognitive tasks such as reading span and backward digit span, which require simultaneous storage and processing of information. This could suggest cortical reorganization of a more distributed neural network among musicians.
Exiles as Guests and Hosts
Ileana Szymanski, Ph.D., University of Scranton

Abstract
Displacement, its awareness, and that of being an other are what make someone an exile. But, how does an exile deal with this? How does she begin approaching this new crossroads of specific times and places in and with an other where she now finds herself? I would like to offer an approach to dealing with these questions by looking at the relationship that the exile has with her new community. This relationship is in many cases framed in terms of the relationship between a guest and a host and, thus, questions about whether and how hospitality is offered and received are pertinent. In most cases, as was mentioned above, it is understood that the exile is the guest, i.e. the one that has left home behind, and now looks for a new home; the host, by contrast, is the inhabitant of the exile’s new home, the one that will receive the guest. This understanding is, on many occasions, coupled with the idea that exiles are guests that are handed something out and, consequently, they are expected to behave as polite guests; namely, to take what is given to them, be grateful, and leave promptly. This description of the relationship between the exile as a guest, and her new community as a host is partial and dissatisfactory; it does not address the situation in its multiplicity and richness. On the one hand, not all relationships of exiled persons and their new communities are negative and, thus, we need not encase all guests and hosts in the model described above. On the other hand, the relationship of guest and host needs to be understood as if the roles of guest and host could be or should be multiplied and exchanged amongst the interested parties. In other words, both the exile and her new community can be guests and hosts of one another. It is my contention that this alternate understanding of roles may lead to a greater possibility for a fulfilling and peaceful cohabitation of the exile and her new community.
Abstract
This project examines the ethical and moral problems involved for the viewer of a photograph of human suffering. To interrogate these problems the presentation will take three turns. First, I will investigate the insights visual cultural studies offers to deconstruct the event not only as viewing a photograph but reading the image as a cultural text. Second, I will construct a Christian social ethical response to this event by drawing on the principle of *Imago Dei*. Being made in the image and likeness of God holds an imperative to realize the dignity and radical sociality of the viewer and the viewed. Finally, drawing upon the unlikely dialogue partners of bell hooks and Ignatius of Loyola I will explore the power, privilege, and possibility of contemplative gaze to hold the possibility of solidaristic praxis between the viewer and the viewed at the crossroads of history.
Insights from Practical Theology: Forging Successful Community Collaborations
Sr. Mary Ann Zimmer ND Ph.D., Marywood University

Abstract
Practical theology is a discipline that studies the theological underpinnings of the concrete practices of a faith community and the learnings available from examining these practices. Work for justice and the alleviation of human suffering are included among these practices. This research examines the common qualities of three successful projects that address issues of advancing justice and relieving human suffering. Christian groups undertook each of these projects in partnership with governmental or secular institutions. Examination of these three cases yields four common qualities that I argue undergird their success. These four qualities are a) careful consideration of the fit between the particular project and the religious group’s central commitments; b) clear awareness of the differences between the collaborating groups; c) willingness to change and learn through the partnership process; d) commitment to working through the struggles that differences inevitably produce.
Abstract
This study collected and analyzed empirical data revealing which methods of instructions had strong student support and why. A survey instrument was administered to all academic levels of undergraduate hospitality management students at ten (10) institutions within courses selected by the specific professors. Four hundred seventy one (n = 471) useable completed surveys were analyzed.

A major utilization of the research survey results will be for faculty, especially hospitality management faculty, to analyze their current methods of instructions to students’ preferred methods of instruction.

The survey questions included dependent and independent variables for cross-tabulation of the results. The Statistical Package for the Social Sciences (SPSS) was used for statistical analyses, the chi-square to test significance. Frequencies and percentage distributions were obtained.
Student-Created Tutorials as an Assistive Technology Instructional Module
Using Computer-Based Instruction
Russell Owens, Ph.D., King’s College

Abstract
For children with disabilities, assistive technology (AT) in the context of computer-based learning environments extends physical, social, and communicative abilities and provides the means for academic inclusion. This study sought to improve AT training modalities by implementing student-designed and -developed AT tutorials. The researcher was interested in exploring undergraduate students’ perceptions of the tutorial design process, particularly as related to their learning styles, and how the process affected their academic experience and achievement. More specifically, this qualitative study investigated whether the use of student-created computer-based tutorials using AT in a collaborative learning process enhances student learning and evaluation of classroom experiences. The sample consisted of 52 first- and second-year undergraduate students enrolled in a “Technology for Educators” course. Students were asked to develop a tutorial in a two-step process. For the first step, the researcher asked the students to create a step-by-step generic computer-based instructional tutorial to deliver instruction without regard to any disability of the user. For the second step, students had to take a disability into consideration. Upon completion of the tutorial, the students were interviewed about their experience. Overall, the students felt that the AT project aided in their teacher preparation. By designing tutorials to accommodate individuals with special needs, students were forced to research different disabilities and creatively modify lessons. Further, most students stated that the AT project would help in the development of their future students who may have disabilities. Taking into account the limitations of the study, recommendations for further research were presented.
Abstract
GIS and Ethics in the Undergraduate Classroom
In the college classroom environment, geographic information systems (GIS) studies bring together a variety of student backgrounds and interests. One of the more fascinating aspects of engaging students with the material is providing an arena for students to research, design and deliver individual projects of voluntary selection. While the academic backgrounds range broadly from environmental sciences to information technology to criminal justice, each class delivers an example of ethical matters with GIS data. Concerns include distribution of real personal data, data lacking quality assurance and quality control, as well as presentation of topically sensitive subject matter such as sex offenders and hate groups. The publication of this data either for the classroom or larger public audiences, should ensure the technology and its facility is emphasized, not the specifics of the data itself. This presentation aims to explore the common topics which have volunteered themselves in the classroom environment and how they are woven into the curriculum.
Abstract

This paper discusses the findings of a cross-cultural qualitative study in which women in undergraduate engineering programs were asked to describe their parents’ influence on their decision to pursue engineering. First conducted in 2008 with 16 women in Northeastern Pennsylvania as part of a dissertation, the methodology was repeated in 2009 with 15 women in two cities in Malaysia, where women in STEM fields are not as underrepresented as in the US. While many of the themes that emerged in the original study were found in the Malaysian study, there were several marked differences between the two studies that bear closer examination. These differences will provide the core of the discussion.
Design of Curriculum Modules for K-12, Undergraduate and Continuing Education in Sustainability and Renewable Energy
Robert A Spalletta Ph.D., and Argyrios C Varonides Ph.D., University of Scranton

Abstract
One critical issue facing our society today is the availability and affordability of energy resources. There is significant debate at all levels of society regarding the ways our energy needs can be met. To provide a context for this debate a set of educational materials is being developed to provide information and guidance for all levels of interest and educational background. These materials are being created by a multidisciplinary team and encompass expertise across the spectrum from the natural sciences and engineering to management and economics and on to political science and education. Furthermore, the team consists of members across the university community (Faculty, Students and Staff) as well as educators outside the University.

Seven Undergraduate Modules are under development, each with either a laboratory or field experience component: (1) Solar Energy, (2) Photovoltaics, (3) Photovoltaic Systems, (4) Economics, (5) Environmental Impact, (6) Public Policy Initiatives and (7) The Future of Photovoltaics. At the advanced undergraduate level a course, “Electricity From The Sun” includes detailed information on the solar cell, Photovoltaic Engineering, Solar Radiation, Applications of Solar Energy and Advanced Topics (e.g., Large PV Power Plants, Concentrated Photovoltaic Systems, Tracking Systems and Optics). Finally, for the Elementary and Secondary Education levels the seven undergraduate modules are being adapted through collaboration between educators and students at all levels both inside and outside the University of Scranton.
Flynn discussed the mission and vision of the medical college with a focus on impacting economic development in Northeastern Pennsylvania through transformation of healthcare through residency training programs, clinical trials, and economic development through research.

In his discussion on research he stated that there are currently 20 research intensive faculty who have received a total of $3.7 million dollars in funding for their research. These faculty members are focusing on the areas of cancer, diabetes, cardiovascular and aging research. Their specific areas of expertise are in molecular biology, protein biochemistry, cell biology, physiology, bioinformatics, epidemiology, and community medicine.

Flynn also discussed the investment of time and dollars needed to develop biotech companies. Many times these ventures take major investments from a diverse group of funders including private investors, angel funding, STTR and SBIR, venture capital and corporate sponsorships.

In an effort to develop biotech firms the medical college has details for developing the regional workforce based on a new two year degree program, Professional Science Masters (PSM) Degree. This tuition-based program would train students to become technical specialists in biotechnology. Development of this would be based on engaging local companies for advice on training future employees with a focus on internship opportunities.

All of the details including a timeline for program development and implementation may be viewed in Flynn’s full presentation.
The Wilkes University Law School Planning Initiative began in 1996 with the formation of a feasibility study committee chaired by then Acting Provost Bernard Graham, Dean of the Nesbitt College of Pharmacy & Nursing. The results of that preliminary feasibility study suggested that there is demand for legal education in Northeastern Pennsylvania and that a school located in the region would provide an important service to prospective students, the legal profession and the community. Following a national search, Loren (Chip) Prescott was appointed Dean of the Law School Initiative in May 2008. Dean Prescott appointed a 35-member advisory board during the 2008-2009 academic year (a board comprised of judges and lawyers from throughout the region) to assist him in completing a comprehensive feasibility study. That study, which recommends the creation of a law school at Wilkes University, was approved by the University trustees in June 2009, subject to completion of a successful fundraising campaign designed to raise the funds necessary to develop the school and a suitable facility.

Following final approval of the project by the University Board of Trustees, an application for approval of a new professional program will be submitted to the Pennsylvania Department of Education. Following that approval process, faculty and staff hiring and student recruitment will begin. Current plans call for the inaugural class to be admitted in August 2011.
The new school took its first class in fall 2009. Hunt detailed the development of the School of Architecture with a focus on ethical building. In an effort to become LEED certified many viable reuses of demolition from an existing building on campus had to take place in order for short and long term cost savings to occur. As part of this certification a requirement to lower operating costs and an effort to increase the asset value of the building were required. Additionally, conservation of energy, water and efforts to make the building healthier and safer for its occupants was required. Thus showing the owners commitment to environmental stewardship and social responsibility. Most materials (nearly 475 tons) of demolition, was taken from the former gymnasium (home to the new School of Architecture) to be recycled. Of this tonnage, 393 tons or 85% of the demolition contents was recycled.

The retrofitted building harvests rainwater, has a green roof, and harvests light to make the building cost effective and environmentally sound.
Wilkes University –Nesbitt College of Pharmacy
Bernard Graham PH.D., Dean Nesbitt College of Pharmacy

Wilkes University’s Nesbitt College of Pharmacy has been in existence for over 10 years. Students complete the six year doctoral program with options to go into practice while some go on to post-graduate training. Although the program’s primary mission is professional education, research and practice are valued primarily as they support Wilkes commitment to educational excellence and faculty development. The School of Pharmacy offers two degrees: the Bachelor of Science in Pharmaceutical Sciences and the Doctor of Pharmacy degree.

The Pharm. D. requires four years of professional study following completion of all pre-pharmacy course requirements. The first year is devoted to classroom and laboratory work. Each subsequent year introduces more direct patient care and practical learning opportunities. The capstone fourth year is devoted exclusively to clinical education.

Most pharmacy students are involved in community service and service learning. One program The Pharmaceutical Access Project has been growing strong for eight years. The program has been providing critical medications and pharmaceutical care to low income persons who are either uninsured or underinsured. It has adopted a “restricted formulary” to optimize the availability of standard, cost-effective agents. This guarantees a continual supply of the basic pharmaceuticals to eight area clinics. The student volunteer contribution is invaluable and all of the clinics have been provided with thousands of volunteer hours.

Since the first graduating class of Doctor of Pharmacy students in 2000, between 10-15 percent of graduates from each class pursue post-graduate training. Although post-graduate training for pharmacists is not new, it is not required for practice. The graduates committing to this training sacrifice time and income to further advance their career and impact the health of patients. Post grad students study at institutions throughout the United States.

Graduates from the School of Pharmacy are providing quality patient care in a wide range of health systems, in metropolitan and rural areas, in 22 states. Common areas of pharmacist employment include retail pharmacies, hospitals, clinics, and pharmaceutical sales.