4-17-2001

Proceedings Student Research and Creative Endeavor Symposium

Office of Undergraduate Research and Creative Endeavor

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PROCEEDINGS
Student Research
and
Creative Endeavor Symposium

The
Sigma XI Competition

April 17, 2001
Walb Memorial Union

and

ANNUAL REPORT
Office of Undergraduate Research
and
Creative Endeavor

Indiana University-Purdue University Fort Wayne
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ROSTER
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PROCEEDINGS OF THE UNDERGRADUATE RESEARCH AND CREATIVE ENDEAVOR SYMPOSIUM
A MESSAGE FROM
THE VICE CHANCELLOR FOR ACADEMIC AFFAIRS

Welcome to the fourth Student Research and Creative Endeavor Symposium. This year’s symposium marks three advancements which are noteworthy.

One, the symposium is open to students from six area colleges and universities: Huntington College, Indiana Institute of Technology, IVY Tech State College, Manchester College, Taylor University, and The University of Saint Francis. The chief academic officers of these colleges and IPFW sit as the Area College Deans’ Council to discuss matters of mutual interest and to sponsor collaborations such as the annual conference on teaching. The symposium provides a forum for student-to-student communication. Students from Huntington College, Indiana Institute of Technology, Manchester College, The University of Saint Francis are participating this year. My greetings to each of you.

Two, the symposium is formally open to graduate students. This is in response to the requests of IPFW faculty who want graduate students, like undergraduate students, to have a forum for presentation of their research. This development is recognized in the symposium’s new name. Formerly the Undergraduate Research and Creative Endeavor Symposium, the event is now the Student Research and Creative Endeavor Symposium.

Three, this year’s symposium is the largest one to date. The size is augmented by students from area colleges, by graduate students, and also by a record number of IPFW undergraduates. The increase is strong evidence of the scholarly interests of students throughout higher education.

Enjoy the day!

Susan B. Hannah
April 2001
ABSTRACTS
AREA COLLEGES AND UNIVERSITIES
ASSESSING THE IMPACT OF A COLLEGE-COMMUNITY HOMEWORK TUTORING PROGRAM
Amy E. Bixler, Rusty Coulter-Kern
Sponsor: Rusty Coulter-Kern
Department of Psychology
Manchester College

Recently, there have been calls for members of the community of higher education to recommit to public service. As a result, there is growing emphasis on using service learning to address community needs. However, many programs are either not assessed or only assessed anecdotally. The purpose of the present study was to assess the impact of a homework-tutoring program. For this, grounded theory, a qualitative research strategy, was used.

In the current study, librarians and tutors were interviewed, tutoring was observed and evaluations were given to parents and tutors in the program. Data indicates most children benefited from the homework-tutoring program. For example, in the first wave of survey data, 13 out of 16 parents (81%) reported that their child’s grades at school had noticeably improved. In the second wave of survey data, 19 out of 21 parents (90%) reported that their child’s grades at school had noticeably improved. Multiple data sources provided evidence for the following reasons for change: tutor-student bonding, academic skill development, and positive changes in student attitudes. In order to validate earlier research efforts, all categories of change were summarized and a questionnaire was developed to measure the impact of tutoring from the perspectives of both tutors and the parents of children tutored. In addition, the next phase of data collection will also include focus group data gathered from tutors in order to develop a theoretical model of how tutoring impacts change in students. Further research is needed using both qualitative and quantitative methods to assess variables that impact academic change.
EXPERIMENTAL VALIDATION OF NONLINEAR ANALYSIS OF RUB-RELATED VIBRATION IN ROTATING MACHINERY

Christine E. Carney
Sponsor: Feng Lin
Department of Mechanical Engineering
Indiana Institute of Technology

When a rotor is mounted to a shaft fixed by bearings, unbalances in the system may cause the rotor to rub against its case. The rub-related vibration affects the performance of many practical items such as turbines, pumps, and electric motors, and it sometimes causes catastrophic failure. The purpose of this project is to study the nonlinear behavior of rub-related vibration. A rotor test rig and its computerized data acquisition system are used to gather necessary measurements. By exciting the rotating system over a range of frequencies, the general response of the structure can be measured. The frequency responses of the system are measured using the Fourier Spectrum Analyzer and plotted to provide approximate values of the natural frequencies and damping ratios experienced by the rotor. A case for the rotor is then designed. The clearance between the rotor and the casing should be able to be varied in order to study the effects of the clearance. The rubbing and impact between the rotor and its case will then be investigated. In the near future, the experimental measurements will be compared with the findings from the numerical simulation. The comparison of these results will experimentally validate the nonlinear analysis of rub-related vibration in rotating machinery.
A CENSUS AND EVALUATION OF INVITED EXOTIC PLANTS IN OWENSTOWN, ANDROS ISLAND, BAHAMAS—25 YEARS AFTER EVACUATION

Donald R. Leer
Sponsor: Lawrence Wiedman
Department of Biology
University of Saint Francis

In 1973 Owens Illinois Co., the largest of the lumber firms clear cutting Bahamian Pine for paper pulp on Andros Island, Bahamas, decided to remove its operations from the island. In doing so, Owenstown, a community of nearly 1000 loggers and support people, was completely evacuated, with the prefabricated houses and other buildings relocated elsewhere. Many residents had planted flower and vegetable gardens around the community. These were left behind. In spite of not being assisted by humans, many taxa have been quite successful and through time have escaped their original beds to flourish among the endemic flora. No records can be traced of the original Owenstown tract. A map has been made of the former community based on extensive interviews with former citizens and tracing remaining foundations and infrastructures. A reference collection of plants believed to be among the invited exotics has been made through tow field seasons; 1999-2000, 2000-2001 and are being identified. Locations and, where applicable, extent of colonization has been placed on the base map. Results will be monitored for several years noting "progress" of the exotic at the expense of the endemic flora.
THE CASE FOR VIRTUE IN MARKETING
John L. Wait
Sponsor: David Woodruff
Department of Philosophy
Huntington College

The vast wealth of the United States (or any other country with reasonable economic capabilities) enables even its most seemingly proletariat members to have the opportunity to own more than they need to simply exist. Yet, there exists a cost for living in our corporate-minded society. Virtue is often sacrificed for the sake of materialistic gain. This is especially true in the realm of marketing.

The American Marketing Association (AMA) prohibits the use of false advertising. That is to say, they prohibit the use of false premises to elicit a false conclusion from the consumer about the product. However, the AMA is incapable of preventing advertising techniques that utilize true premises that are intended to convince the consumer of a false conclusion.

In this genre of advertising, the moral code is bent for the sake of materialism, which I will show is not something that should necessarily be encouraged. Furthermore, I will examine the criteria by which it would be necessary to judge product advertising, and discuss the feasibility of establishing more focused criteria such that consumer and corporate freedom are preserved.
The copperbelly water snake (*Nerodia erythrogaster neglecta*) is threatened with extirpation across its geographic range due to habitat loss and degradation. To investigate habitat use by the copperbelly in a fragmented environment, eleven individuals (five females and six males) were radio-tracked during the 1999 and 2000 seasons in northwestern Kentucky. The study site was primarily agricultural, with small patches of wetland and forested areas linearly arranged along a channelized creek. Patterns of movement, home ranges, and habitat associations were characterized using snake radiolocations with mapping and analysis of data facilitated by the use of a geographic information system. Compositional analysis was utilized to investigate selective use of landscape level habitat categories. Differential patterns of movement were reflected in the heterogeneity of home range sizes, which varied from approximately three to over 50 hectares. These minimum convex polygon home ranges were generally confined to the boundaries of the available wetlands and linear in shape. Palustrine forest and scrub-shrub wetlands were the most heavily utilized habitats, with particular reliance on edge habitats and the shorelines of wetlands. Observations in agricultural, residential, and upland forested areas were rare, despite the predominance of these habitat types in the area. Results from this research suggest that copperbelly water snake habitat use and spatial ecology are significantly affected by the distribution and availability of suitable habitats. Conservation implications include management guidelines and refuge design criteria.
MOVEMENTS AND MACROHABITAT SELECTION IN FEN WETLANDS BY THE EASTERN MASSASAUGA RATTLE SNAKE (Sistrurus catenatus catenatus).
John C. Marshall, Bruce A. Kingsbury
Sponsor: Bruce A. Kingsbury
Center for Reptile and Amphibian Conservation and Management
Department of Biology
Indiana University-Purdue University Fort Wayne

The eastern massasauga rattlesnake (Sistrurus catenatus catenatus) is considered threatened throughout its range and is currently a candidate species for listing as threatened by the US Fish and Wildlife Service. Habitat destruction has played a major role in contributing to the decline of the species. It is thus critical for successful management of this species that there be a thorough understanding of the local habitat preferences and requirements. To address the spatial ecology of the eastern massasauga rattlesnake in fens located in northeastern Indiana, sixteen individuals (5 males, 7 females, and 4 gravid females) were radio-tracked at two different fens (12 at one and 4 at the other). 100% minimum convex polygons (MCP) and 95% isopleth kernel densities were utilized to estimate home range size. The trend for both methods was similar in that there was no site effect and males tended to have larger home ranges than females, which, in turn, had larger home ranges than gravid females. Estimation of core activity centers was facilitated with the use of 50% isopleth kernel densities and were found to follow the same trend of the home range estimations. Differences between the three snake categories were also found for the following movement parameters: frequency of movement, distance moved per day, range length, and total distance moved. Analysis of macrohabitat selection at one site using compositional analysis revealed that open fen, cattails, sedge tussocks and shrub/scrub were the four most preferred macrohabitats. The conservation implications of our findings thus far, as well as our continuing research efforts, will be discussed.
EFFECTS OF PHOSPHORUS-DEFICIENT DIETS ON THE P-BALANCE OF LABORATORY AND FIELD POPULATIONS OF DAPHNIA

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Sponsor: William DeMott
Department of Biology
Indiana University-Purdue University Fort Wayne

We studied the growth and P-balance of ten species of Daphnia cultured in the laboratory and made comparisons of P balance with field populations. In the lab experiments, animals were cultured for 4 days on P-rich (molar C:P ratio 70) or P-deficient (C:P ratio 1,000) diets of green alga Ankistrodesmus falcatus (1mg C/L). P-rich diets resulted in P-contents of 1.3 to 1.6% body mass, whereas P-deficient diets caused declines to 0.9 to 1.2% mass. Although P-deficient diets caused declines in the P balance and growth of each species, we found interspecific variation in P balance with the P-rich diet and in response to the P-deficient diets. We collected data on the seston C:P ratio for six Michigan lakes and the P-balance for Daphnia species from those lakes. In contrast to previous studies, our results show that the P-content of Daphnia from lakes declines as the C:P ratio of food resources increases.
DIGESTIVE METABOLISM OF THE BANDED WATER SNAKE
John H. Roe, William A. Hopkins, Tom Phillipi and Justin D. Congdon
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Indiana University-Purdue University Fort Wayne

The adaptive digestive response hypothesis describes the adaptive interplay between foraging ecology and digestive physiology in ectotherms. Recent work has demonstrated the metabolic response associated with digestion to be greater in ambush than in actively foraging reptiles and amphibians. While traditional techniques are effective at measuring $O_2$ consumption ($VO_2$) for ambush foragers that typically remain inactive over the course of measurements, such methods are potentially ineffective when examining metabolism of active foragers, which commonly exhibit periods of activity even while digesting. Here, we utilize a computer-controlled respirometer to measure $VO_2$ of actively foraging banded watersnakes ($Nerodia fasciata$) over two consecutive six day periods following ingestion of a single bluegill ($Lepomis macrochirus$) weighing approximately 20% of snake body mass. Our method yielded 264 $VO_2$ measurements of minimal temporal separation for each snake, allowing activity-derived peaks in $VO_2$ to be removed from estimates of digestive metabolism. We estimate standard metabolic rate (SMR) of watersnakes to be .043 ml $O_2$/g*hr. $VO_2$ during digestion peaked at 5 times fasting values, reaching .215 ml $O_2$/g*hr at 22.47 hr post ingestion. The magnitude of the postfeeding metabolic response in watersnakes is less than that of ambush foragers, but is consistent with predictions for actively foraging ectotherms.
THE EFFECT OF THE recA ALLELE IN THE COMPLEMENTATION OF DEFECTIVE BACTERIOPHAGE INDUCTION IN Escherichia coli RecA- MUTANTS PROMOTED BY THE CLONED T4 BACTERIOPHAGE UvsX PROTEIN

Jay A. Zimmer
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Indiana University-Purdue University Fort Wayne

The UvsX protein of T4 bacteriophage is similar in structure and function to the RecA protein of E. coli. Published research has shown that the UvsX protein promotes recombination but not RecA-LexA mediated DNA repair nor an analogous process, the induction of lysogenized bacteriophage. Upon further research, we have discovered that the UvsX protein produced from the cloned gene in medium copy number promotes bacteriophage induction under certain circumstances. Consistent with previous studies, the UvsX protein has been shown to be unable to promote bacteriophage induction in the E. coli RecA+ mutant DH5α. However, in contrast to these studies, complementation of defective bacteriophage induction has been successful in a different RecA+ mutant strain, HB101. This data suggests that complementation of defective bacteriophage induction in E. coli RecA+ strains is dependent on the recA gene allele.
The photochemistry of arylsulfonyl azides is wavelength dependent. The expected products attributable to photo-Curtius rearrangement and singlet nitrene insertion were obtained upon irradiation of 4-methylbenzenesulfonyl azide (1) at 254 nm in methanol. 4-Methylbenzenesulfonamide due to either triplet nitrene or azide photoreduction was also obtained. Yields of sulfonamide and singlet nitrene increased relative to photo-Curtius rearrangement after irradiation at 300 nm. The increase in the ratio of nitrene to rearrangement products was more pronounced for 4-acetylbenzenesulfonyl azide (2). Products from all three processes were observed upon irradiation at 254 nm in methanol, but only the sulfonamide was obtained in significant amounts when 2 was photolyzed at 350 nm. Three conclusions can be drawn from these results. The photochemistry of arylsulfonyl azides is analogous to that of aroyl azides. The choice of substituent and irradiation wavelength can control photochemistry of sulfonyl azides. Irradiation of the n - π* band leads solely to products derived from triplet pathways through intramolecular sensitization.
“WHAT THEY NEVER TELL YOU”
Alison Eby
Sponsor: Beth Simon
Department of English and Linguistics
Indiana University-Purdue University Fort Wayne

“What They Never Tell You” is a first person narrative, told in the voice of a young woman. It was written in ENG W103.
“REASONS FOR THE UNSEARCH”
Janene Hudson
Sponsor: Beth Simon
Department of English and Linguistics
Indiana University-Purdue University Fort Wayne

In a creative nonfiction class (ENG W405) taken in the spring of 2000, I explored various reasons why, as an adopted child, I have not sought out my biological parents. Using memories and insights, I have developed a somewhat humorous essay depicting what some have found to be a life-changing decision.
ANALYSIS OF PRONOUN USE IN A SELECTED TEXT
Dodie M. Miller
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Department of English and Linguistics
Indiana University-Purdue University Fort Wayne

The textbook, Rhetorical Grammar, by Martha Kolln, offers the reader ways in which grammar selections can affect the impression text can make on an audience. The author's own use of the methods described was analyzed in this project. Two sample chapters were chosen and the pronoun usage in those chapters was examined. The research concluded that when the author seemed certain that readers were unfamiliar with ideas presented in the text, she was more inclined to use "I" and "you," and effectively creating distance between herself and her student audience. When Kolln seemed assured that readers had been previously acquainted with the information presented, she was more apt to use "we." In conclusion, the findings demonstrate that choices in grammar, rather than word choice alone, affect how readers perceive information presented.
POEMS
Elizabeth Proctor
Sponsor: Beth Simon
Department of English and Linguistics
Indiana University-Purdue University Fort Wayne

I will read three lyric poems that I wrote in ENG W303.
“UNRAVELING LIFE”
Misty VanMeter
Sponsor: Beth Simon
Department of English and Linguistics
Indiana University-Purdue University Fort Wayne

In the 2000 spring semester, I took a creative nonfiction class (ENG W405) in which I produced an essay entitled “Unraveling Life.” In this essay, I explored what I learned as I worked as a subcontractor to rehab government housing. Writing this essay for me was an exploration of myself as well as a means of coming to an understanding of how individual lives could turn out so differently when on the surface they could appear to be so alike.
GEOCHEMISTRY OF THE McCASLIN FORMATION WITH COMPARISON TO OTHER WISCONSIN QUARTZITE BODIES
Willard D. Barnhouse
Sponsor: Anne Argast
Department of Geosciences
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This study examined the geochemical and mineral content of the McCaslin Formation, a Proterozoic quartzite located in northeastern Wisconsin. The data are used to better understand the formation's relationship to other quartzite bodies in the region. A specific comparison was made to the quartzite material within the Baldwin Conglomerate, another Proterozoic formation in northeastern Wisconsin. The analysis provided evidence that suggests the two materials are dissimilar and the units have no direct correlation. Comparisons were also made to the Baraboo Interval quartzites. An unusual potassium deficiency and the presence of alumina-rich phyllosilicates are noted in the both the McCaslin and Baraboo Interval quartzites. The McCaslin Formation appears to correlate to the Baraboo Interval quartzites.
WETLAND AWARENESS: RESULTS OF A CAMPUS-WIDE RESEARCH SURVEY AT INDIANA UNIVERSITY-PURDUE UNIVERSITY FORT WAYNE
Katie M. Beard
Sponsor: Solomon Isiorho
Department of Geosciences
Indiana University-Purdue University Fort Wayne

Wetland education is important in the preservation and protection of this valuable ecosystem. Wetlands aide in water supply, serve as habitats for unique plant and animal life, and many other functions. Northern Indiana has the largest area of wetlands in the state.

This study attempts to identify the need for wetland education by assessing people's wetland awareness level. A survey was conducted at IPFW to assess the wetland awareness level using a 15-item questionnaire.

A total of 500 surveys were completed, tabulated, and analyzed, using Minitab statistical software. The results show that wetland awareness level increases with class standing. Subjects raised in a rural setting had a median score of 70% as opposed to 50% for the subjects raised in an urban setting (p<0.012). Male subjects scored significantly higher (median of 70%) than female subjects (median of 50%) (p<0.014). Purdue University students at IPFW had a higher median score (70%) than Indiana University students (50%) at IPFW. Overall, more than 50% of the students scored low (below 60%). This study shows the need for wetland education to raise people's wetland awareness level.
LAND USE EFFECTS ON THE LITTLE RIVER WETLANDS, ALLEN COUNTY, INDIANA
Robert Hoverman
Sponsor: Solomon Isiorho
Department of Geosciences
Indiana University-Purdue University Fort Wayne

Wetlands are disappearing at alarming rates in Northeast Indiana and an attempt to slow the pace involves understanding the reasons behind such demise. One factor affecting wetlands is how land is used near wetlands. Land use contributes to the greatest threat to the wetlands in Southwest Allen County, Indiana.

An area was chosen to assess the effect of land use on wetlands in southwest Allen County, Indiana. This study was conducted to find the sources that contribute to wetland degradation in the Little River watershed. The area was ditched and drained during the nineteenth century for farming and the river banks and the banks along the ditches feeding the river are stripped of all natural vegetation. We chose to measure turbidity, total suspended solids, discharge, bacteria, and other parameters with help from the Little River Wetlands Project Inc.

The river tests high for turbidity and total suspended solids without rainfall but have severely elevated values during precipitation events. These values show the necessity for creating buffer strips along the length of the river. Increased turbidity also creates an environment that was once thought to be inhospitable for bacteria life, such as E-Coli, but is believed conducive to many forms. Land use mapping of the little River and the surrounding area shows the diversity of land use and the types of degradation they produce. Increased mining activities in the area have changed the underlying groundwater flow direction. Farms, and new and existing housing with septic systems, cause elevated levels of total Coliform in the river.
HAZARDOUS MATERIALS IN VISUAL ART DEPARTMENTS POSE SERIOUS THREATS

Rya Morgan
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Indiana University-Purdue University Fort Wayne

Hazardous Materials are Prevalent in Visual Art Departments. In many facets of Visual Art, such as ceramics, printmaking, metals, sculpture, photography, paintings, and more, hazardous materials are commonly used throughout the creation process. Information obtained from Material Safety Data Sheets reveals the Health and Environmental implications of handling the different types of hazardous materials. Hazardous materials that cause concerns include Cadmium, Rodinal, Formaldehyde, Methyl chloroform, and Nitric acid. Adverse health effects from exposure to these substances range from a variety of cancers, damage to lung, kidney, and stomach functions, and many aggravate preexisting health conditions. Improper disposal of hazardous materials causes destructive pollution to the surrounding area’s air, land, and water. Suggestions on maintaining a healthy environment include intensive education and training for the faculty and students on the safe handling and disposal of hazardous materials. Strict adherence to safety guidelines such as wearing goggles or chemical aprons, and having the resources available to deal with accidental exposures due to spills, is a crucial step to running a safe Visual Art Department. Precautions need to be set in place to ensure the health of the students, faculty, and environment is maintained.
EXPLORING THE INFORMATION NEEDS AND HABITS OF WOMEN IN THE HEALTH CARE MARKET PLACE
Carolyn Davis Cockey
Sponsor: Avon Crismore
Department of Liberal Studies
Indiana University-Purdue University Fort Wayne

Research demonstrates that women make 75 percent of all health care decisions and purchases for themselves and their families, yet little is known about the information needs of women in the health care marketplace. This research sought to review the professional health care and communications literature regarding when, where and how women access and use health care information. Additionally, a small, qualitative pilot study was undertaken to ascertain what health information women want and need, where they look to find such information, how they use that information in the decision-making process and ultimately, how they act on health care information. Analysis of the literature and research determined that women need information regarding health concerns for their own personal well-being (such as reproductive and menopausal concerns, estrogen-related cancers and other issues), and they need information for those for whom they are making health care decisions and purchases, namely their families. As access to the Internet and World Wide Web increases, health care professionals can expect more direct inquiries from consumers regarding health information needs. It is not clearly understood at this point how consumers in general, and women specifically, internalize and act on health information. Lastly, as this research gives both health care professionals and health care writers greater insights into the information needs of women in particular, it will be important to assess the degree to which quality information affects good treatment decisions and health outcomes for consumers.
BORN WITH NOTHING AND BETTER OFF THAT WAY:
BRUCE SPRINGSTEEN'S EVOLVING HERO

Michele R. DeVinney
Sponsor: John Minton
Department of Liberal Studies
Indiana University-Purdue University Fort Wayne

The music of Bruce Springsteen has long been regarded and heralded as the voice of the working-class hero. Over the years, that hero has changed, taking on more worldly and culturally expansive dimensions. By examining two of his albums, 1978's *Darkness on the Edge of Town* and 1995's *The Ghost of Tom Joad*, the tone and perspective of those characters—transcending Springsteen's own autobiographical context—can be fully appreciated. The lyrical content and musical tone of the respective collections, and the close analysis of both, demonstrate that Springsteen captures not only his own personal evolution but the changing social and political climate that he perceives, giving us a glimpse into the diversity and isolation that exists across the American landscape.
Drama is Doing: *Adolescent Theatre-A Hands on Approach*

Timothy Jack Miller  
Sponsor: Michael Kauffman  
Department of Liberal Studies  
Indiana University-Purdue University Fort Wayne

A survey of adolescent theatre texts reveals books that are best suited for high school or even college. These texts center on theory, with questions at the end of each chapter to be used as an assignment. Texts such as these leave little room for hands-on exercises, such as improvisation or scene work. Any supplemental texts, while full of excellent ideas, are generally labor intensive. What has been created is a text and curriculum focused on learning by doing. The text is more of a resource book for the middle school or high school drama teacher. It is a guide with daily lesson plans that build upon each other. It is a curriculum with three levels of skills accommodating nine and twenty-week grade periods. The text includes exercises along with ready to use materials, monologues, and scenes for practice and performance, theatrical mini-units with notes and tests for each unit, suggestions for extended study and resources for locating materials. It is a complete, self-contained curriculum.
A Laser Power-meter is an instrument capable of measuring the average power of a laser. Commercial power meters may be purchased, but at substantial cost ($2,000). The technology involved in the construction of such a device is not complicated. Therefore, we have made one with the help of a microcontroller, and the overall cost of materials was cut to $15. Our design of a Laser Power-meter works by measuring temperature increases of thermal absorption based on the absorption of light. The absorption approach was chosen because it will result in a flat response, meaning all laser wavelengths are treated equally, which is extremely desirable. The equation which describes the energy flow in such a device is given as
\[ mc \frac{dT}{dt} = P - \varepsilon \sigma A_1 (T^4 - T_0^4) - kA(\Delta T/L) \]

in which \( c \) is the specific heat of the sensor material, \( A_1 \) is the surface area of the sensor, \( A \) is the cross-sectional area of contact of the sensor with the conductor, \( L \) is the thickness, \( P \) is the power of the laser, \( \Delta T \) is the temperature difference between the conductive surfaces in the sensor, and \( \varepsilon \sigma A_1 (T^4 - T_0^4) \) is the energy lost to radiation. We have made the sensor such that the energy lost to thermal radiation is negligible. The microcontroller converts the sensor output to a digital signal, and performs the proper calculations to increase the response time of the meter and to allow quick and easy data logging.
I am currently investigating incorporating organic dye into a polymethyl methacrylate (PMMA) matrix, which would result in an organic dye active medium in the solid form. The active medium is the optical amplifier of a laser. Organic dyes are used specifically for tunable lasers because their fluorescence is a small continuum of wavelengths. The lasing wavelength can be tuned with dispersive optical components, such as a diffraction grating or prism. The tunability of the dye laser is an important characteristic, which allows the operator to use one laser for many different tasks requiring different wavelengths. Characteristically, the organic dyes dissolved in alcohol and used in the liquid state. This poses problems for designers as well as operators. Modifications for a liquid active medium, such as a flow system, make the design of an organic dye laser cumbersome. Organic dyes are very toxic as well. The liquid form can be quite sloppy, increasing the chance of exposure if there is leak or malfunction. By using the dye in polymer form, the instability of a flow system would be alleviated as well as the risk of exposure to the toxic dyes. We have produced two forms of doped polymer: one with Rhodamine 6G dye and the other with Nile Blue dye. The Rhodamine sample will be excited by pulsed Nd:YAG laser while the Nile Blue sample will be excited by diode laser. The Nile Blue polymer dye samples are being synthesized in the lab and are currently being tested in standing wave optical cavity designs. Our findings will be used to further the design of safer and more stable optically pumped tunable dye lasers.
AN EXPLORATORY ANALYSIS OF THE VALUE OF UNDERGRADUATE TEACHING ASSISTANTS FOR STUDENTS TAKING CHILD PSYCHOLOGY

Steven G. Chen, Keith A. Egly
Faculty Sponsor: Lesa Rae Vartanian
Department of Psychology
Indiana University-Purdue University Fort Wayne

A long tradition of utilizing graduate teaching assistants has existed at many universities. Recently, the Department of Psychology at IPFW has introduced a program that allows undergraduate students to serve as teaching assistants for course credit. As this program is in its infancy, it is necessary to evaluate the value of undergraduate teaching assistants to those students taking courses in Psychology. After eight weeks of having undergraduate teaching assistants present in two sections of PSY 235: Child Psychology, students were given an anonymous questionnaire to assess the perceived effectiveness and value of the undergraduate teaching assistants. The resulting sample \( N = 101 \) was analyzed both descriptively and statistically. Data from a smaller sub-sample of students who had attended at least one exam study session conducted by the teaching assistants were also analyzed. The results indicate that undergraduate students view the undergraduate teaching assistants as useful, additional resources for their use in the course, and indicate clear willingness to seek their assistance.
‘WAS IT GOOD FOR YOU?': LATE ADOLESCENTS’ SATISFACTION WITH SCHOOL-BASED SEX-ED
Doug M. Conner, Cami L. Herron, Miranda P. Goodman, Neil A. Leszinske, Jodi M. Teusch
Faculty Sponsor: Lesa Rae Vartanian
Department of Psychology
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Recent reports point to an overall decrease in the rate of teen pregnancy. Although this is encouraging for communities, educators and policy-makers, one possible negative result of this downward trend could be an assumption that the programs responsible for bringing about this trend are no longer a top priority for funding. As part of our coursework for Human Development II: Adolescence (PSY 362), we sought to collect data that would provide insight and information about the need to continue and perhaps improve school-based sex education programs. Data collection is underway; we are administering an anonymous survey to undergraduate students at IPFW (goal N = 250). This survey asks for information such as participant’s age, gender, race/ethnicity, family background, years since high school graduation, and questions pertaining to their current and past sexual experiences. The survey also presents 60 issues/topics that might be addressed within the context of a sex ed program; these issues/topics cover areas such as Biological/Physical Aspects of Sex, STD/Contraception Knowledge, Clarification of Values Related to Sexual Behavior, Relationship/Communication Issues, Pregnancy/Parenting Issues. For each of the 60 issues/topics, participants are asked to make five ratings using a 5-point scale: 1) how knowledgeable they feel about the issue/topic; to what extent they have discussed it 2) with their parents; 3) with their peers; 4) how thoroughly their school-based sex-ed class(es) covered it; 5) how satisfied they are with the coverage provided by their school-based sex ed program. Preliminary data analyses indicate that late adolescents are not wholly satisfied with their school-based sex education experiences; additional analyses examining age and gender differences, as well as differences based on the demographic and sexual history information collected will be discussed.
EXPLORING RELATIONS AMONG POSITIVE VERSUS NEGATIVE IMAGINARY AUDIENCE AND PERSONAL FABLE IDEATIONS AND ASPECTS OF ADOLESCENT EMOTIONAL WELL-BEING

Rene M. Dickerhoof
Sponsor: Lesa Rae Vartanian
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Indiana University-Purdue University Fort Wayne

This study considered two classic patterns of adolescent thought: imaginary audience and personal fable ideation. Imaginary audience ideation can be likened to over-estimating one’s significance in other people’s thoughts. On the other hand, personal fable ideation reflects a belief that the self is unique, omnipotent, and invulnerable. Past research has indicated the these thought patterns may be negatively related to adolescent adjustment. For example, imaginary audience has been likened to adolescent self-consciousness, shame, and susceptibility to peer pressure, while personal fable is thought to be related to adolescent loneliness, risk-taking, and pregnancy. However, whereas some studies have found that imaginary audience ideation predicts depression, personal fable ideation seems to serve as a buffer against it. Past research has not considered positive versus negative varieties of these cognitive constructions; considering that traditional operational definitions of imaginary audience ideation have been negative, whereas traditional operationalizations of personal fable have been positive in nature, these findings are not surprising. Imaginary audience and personal fable ideations may either insulate the adolescent from or predispose them to depressive affect, depending on the extent to which they reflect positive or negative beliefs about the self. Thus, to understand more fully how these thought patterns relate to emotional well-being, traditional measures of both thought patterns were revised to reflect both positive versus negative beliefs about oneself. Pilot data from 100 college students indicated that the newly revised measures were internally consistent. Those measures as well as measures of emotional adjustment were then given to a new sample of college and high school students. Although data collection is still underway, preliminary results indicate that imaginary audience and personal fable ideations which are positive in nature do, in fact, appear to be related to positive affect and superior adjustment, while negative versions of these ideation patterns are related to depressive affect. These preliminary findings highlight the importance of distinguishing between positive versus negative varieties of imaginary audience and personal fable, particularly when studying the role both thought patterns play in adolescent adjustment and development.
MOTHERS' AND ADOLESCENTS' PERCEPTIONS OF THEIR RELATIONSHIP: SHARED OR DIVERGENT REALITIES?

Jenna M. Harmeyer, Keith A. Egly
Faculty Sponsor: Lesa Rae Vartanian
Department of Psychology
Indiana University-Purdue University Fort Wayne

A common stereotype of parent-adolescent relationships is that parents and their adolescents are constantly at odds and experience great discord in their relationship. To what extent does this stereotype accurately reflect parent-adolescent relationships? Data from a larger, on-going study of parent-adolescent relationships were analyzed to address this question. Eighty-nine mother-adolescent pairs participated in this study. The adolescents were from grades six through twelve; the majority were female, Caucasian, and from two-parent homes. Both members of each pair independently completed the Parent Behavior Scale (PBS) and the Parent-Adolescent Relationship Questionnaire (PAQ). These surveys provide assessments of the extent to which parents provide their adolescents with support and supervision, facilitate autonomy and independence, and express warmth and affection. On the PAQ, parents were asked to respond to the items as they thought their adolescent would respond. Correlational analyses of the scales revealed a number of statistically significant positive correlations among mothers' and adolescents' perceptions of parental behaviors and relationship quality; thus, mothers and adolescents appear to have shared, rather than divergent perceptions of their relationship. However, the magnitudes of the significant correlations often varied substantially, indicating that although the perceptions were shared, they were not shared perfectly. It was also found that mothers' and adolescents' perceptions of parental supervision increased with adolescents' age. Additional analyses (e.g., results for mother-daughter versus mother-son pairs) will be discussed along with theoretical implications.
The aim of this study was to examine what men and women consider to be the ideal body for both sexes, as well as the role their overall body esteem and susceptibility to body-related mass media might play in constructing these ideals. College students (N = 287) completed surveys measures of body esteem and their susceptibility to appearance-related mass media messages. They also provided written descriptions of the "perfect male" and "perfect female" bodies. Two coders independently coded the extent to which those descriptions reflected emphasis of six dimensions of body image: Muscularity/Apparent Fitness, Thinness-Roundness, Height, Hair, Facial Features/Skin, and Specific Sexual Body Parts (e.g., breasts, buttocks). Percent agreement between the two coders was not less than 90% for any single dimension. Analyses of the distributions of the emphasis codes for each dimension yielded a number of interesting patterns: females’ descriptions reflected use of more dimensions, and more specific use of them, not only for the "perfect female body," but for the "perfect male body" as well. Males and females who reported more susceptibility to media influence tended to emphasize common features when describing the "perfect" bodies, namely muscularity/fitness in men and thinness in women. Although both sexes agreed for the most part on what makes for an ideal female body (with the exception of Specific Sexual Body Parts, which was emphasized more strongly by men), there was less agreement concerning male physical perfection. Interestingly, females stressed the importance of muscularity to a greater extent in both sexes than did males. It seems that, even though mass media models appear to reinforce the stereotype of the muscular man and the thin woman, this scheme requires further qualifications. For instance, thinness also played a role in conceptions of "perfect male" bodies, while fitness and muscularity did so for "perfect female" bodies. It may be that for both sexes, a balance between being thin and muscular represents the ideal.
CURRENT DIVORCE RATE AMONG HINDU POPULATION IN INDIA: CAUSES AND CONSEQUENCES
Larisa Drozdova
Sponsor: Michael Nusbaumer
Department of Sociology and Anthropology
Indiana University-Purdue University Fort Wayne

This paper examines why, despite the legalization of divorce by the Hindu Marriage Act of 1955, the divorce rate among Hindu population in India remains remarkably low, especially by Western standards. The purpose of this research is to analyze economic, social, and cultural conditions in modern day India in order to better understand the likelihood of divorce. This analysis utilizes findings from previous studies. Research indicates that economic dependence of Hindu women on their husbands prevents many of them from seeking divorce even in cases of severe marital problems. Despite Hindu women’s entitlement to alimony from their ex-husbands and their right to inheritance, as well as the existing potential for employment, divorced women often find themselves without adequate means of financial support. Implications of this situation are examined in terms of the Indian legal system’s failure to ensure economic security for divorced women, economic circumstances related to employment opportunities for women, and the social consequences of traditional Hindu beliefs regarding marriage and a woman’s role in the family. In conclusion, the paper discusses potential future changes with regard to divorce rates in India.
INVISIBLE STUDENTS: FEMALES IN THE CLASSROOM
Jason Bell, Corinne Meyer, Shad Turner
Sponsor: Hedayeh Samavati
Department of Economics
Indiana University-Purdue University Fort Wayne

The purpose of this paper is to examine the effect of education inequality between males and females. Studies show that men and women receive different treatment in their educational careers. The question we try to answer is whether women are directed towards certain paths because of the inequality in the United States educational system. Our research will examine the reasons and consequences of this inequality. Our focus will be gender bias women face throughout their education. We will look at the different treatments females receive in the classroom; how this affects their course of study and ultimately the career they choose. In conclusion we will look at ways to eradicate these inequalities. This research will be valuable in bringing about change that allows people to have equal access to education. Thus, leveling playing fields enhances the chances for both sexes to have productive roles in our society.
THE IMPACT OF THE FAMILY MEDICAL LEAVE ACT
Angelique D. Causey, Jason D. Sorg, Mehmet Sezginer
Sponsor: Hedayeh Samavati
Department of Economics
Indiana University-Purdue University Fort Wayne

As society has changed and more women have entered the workforce, the need has arisen to protect the concerns and issues of the family. The Family Medical Leave Act (FMLA) was established to help balance the demands of family and the workforce. The Act in its principle form was designed to be implemented in a nondiscriminatory nature with respect to gender or race. Our examination is focused on the effectiveness of the Family Medical Leave Act and its implications from the perspective of the employer and the employees. Major areas of interest include cost, usage and possible violations of the Act. There is also an attempt to evaluate the claim for a non-gender bias implementation of the FMLA. Ultimately, we plan to discover the Family Medical Leave Act’s ability to accomplish its underlined goals and determine whether it is an additional cost or truly a benefit to companies in the form of higher productivity and enhancement of morale among employees.
THE COST OF AMERICA'S "WAR ON DRUGS"
Steve George, Jan L. Wade
Sponsor: Hedayeh Samavati
Department of Economics
Indiana University-Purdue University Fort Wayne

What are the costs of the "War on Drugs?" During President Richard Nixon's term in office, the United States of America declared a "War on Drugs." The "war" began in 1973 and continues to this day. It is one of America's longest and most costly wars to date. What is the total cost of this "War on Drugs?" Who pays the real price of this war? What are the successes and failures of this war? This paper examines the evidence in order to find an answer to these questions. In addition, alternative approaches to solving the "drug problem" are explored. The categories of race, gender, and class will be used to study all of the above issues.
CAREER PATHS: WOMEN AND MINORITIES' SELECTION OF OCCUPATIONS
Farah Gosnell, Ruben Aguirre, George Raptis
Sponsor: Hedayeh Samavati
Department of Economics
Indiana University-Purdue University Fort Wayne

Women and minorities are persistently over-represented in the service industries and most menial occupations. Women and minorities are disproportionately over-represented partly because these are the positions that are most readily available to them. The purpose of this paper is to investigate what causes women and minorities to be most often trained and selected for the service industries and for menial-type labor. This paper examines the direction of education and training of women and minorities, explores the obstacles faced in attempting to choose alternate career paths, and the consequences for society as a whole if career paths shift dramatically. In addition, this paper will review possible solutions and strategies for increasing the possibilities for women and minorities in the labor market when selecting an occupation.
INCLUSION, LOOPING AND ESL: WHAT WORKS AND WHAT LURKS
Jacalyn S. Butler
Sponsor: Sheena Choi
School of Education
Indiana University-Purdue University Fort Wayne

Providing young learners with consistency and continuity is easily achieved by looping (keeping the same students for two grades in a row with the same teacher). Problems in discipline, learning new rules, and other negative behaviors are reduced. Opportunities to establish good working relationships with students and their parents are increased. Academically, the teacher knows where the child “ended” the previous year, so can quickly “pick up” and continue without losing valuable teaching time. A looping classroom setting is a natural placement for learners with special needs for the same reasons. Since our school population is now expanding to include students who qualify for the English as Second Language program, we welcome unique opportunities brought to the tasks of both teaching and learning. These challenges in diversity are met by school staff and students who find that the methods are not unlike what we already do, but do require a few extra twists.
THE RENOVATION OF SOUTH SIDE HIGH SCHOOL, FORT WAYNE INDIANA, 1993: A CITY DIVIDED
Charles M. Cole
Sponsor: Kathleen Murphey
School of Education
Indiana University-Purdue University Fort Wayne

The research was an investigation of the controversy surrounding the proposed renovation of South Side High School in 1993. The controversy raised issues of race, taxes, equity, personality, and a school's role in the community. The research intended to address these issues and determine the merits of the many conflicting positions. The research was conducted by reading newspaper accounts of the events, letters to the editor, editorials and by interviewing school board member, Steve Corona. Analysis of these issues showed the proposed renovation was necessary and the building costs and tax increases were reasonable. Also, research explains the role of the Fort Wayne Community Schools' superintendent in the controversy. In addition, it explored a belief of some in the African-American community and among residents of the south side of the city that opposition to the project was based in racism. Most importantly, perhaps, research affirmed that schools do play an important role in communities and neighborhoods not only by educating children but also by serving as an anchor to help revitalize and stabilize surrounding areas.
HAVERHILL ELEMENTARY: A HISTORY OF PARENTS AND TEACHERS WORKING TOGETHER
Tracy L. Cox
Sponsor: Kathleen Murphey
School of Education
Indiana University-Purdue University Fort Wayne

My paper studied the impact of parental involvement in positive ways during the last twenty years at Haverhill Elementary School in the Southwest Allen County school district. I chose to research the school where I currently teach. I chose this topic because the school that I had previously taught at had very little parent involvement. By contrast, Haverhill's Parent Teacher Club (PTC) is very involved and very unique. The influence of parent involvement has been heavily researched. Much of the research supports the idea that parental involvement is the greatest predictor of student success. My paper uses many primary and secondary sources including interviews with the current principal, teachers, parents and the current PTC president. I conducted a teacher survey on their opinions on parent involvement. I used Performance Based Accreditation documents, PTC newsletters, a PTC handbook and newspaper articles. I researched the importance of parental involvement through journal articles and I briefly explore the history of the national PTA and its relationship to Haverhill's PTC organization.
THE EXPERIENCES OF O.D. "BUD" FERGUSON AS A STUDENT IN A ONE-ROOM SCHOOLHOUSE NEAR FRENCH LICK, IN FROM 1924-1931 : A PERSONAL ACCOUNT
Amy S. Dankert
Sponsor: Kathleen Murphey
School of Education
Indiana University-Purdue University Fort Wayne

History is not only about distant places, wars, and specific dates. History can be about an event that happened yesterday. There is a historical significance in the people and places in every part of the world. This nearby history research project was centered on the experiences my grandfather in a one-room schoolhouse. The primary research was conducted by interviewing my grandfather on this topic. Also, I gathered and analyzed photographs, a report card, a drawing of the school's floor plan, and an eighth grade diploma from my grandfather's personal archives. To add dimension to the story of his schooling, I read many books on this topic that depicted the accounts of others who were either educated or were educators in a one-room schoolhouse. I integrated my sources to create a picture of life for students in a one-room schoolhouse.
THE HISTORY OF SOUTH ADAMS SCHOOLS' GIFTED AND TALENTED PROGRAM
1984-2000
Rebecca S. Eddy
Sponsor: Kathleen Murphey
School of Education
Indiana University-Purdue University Fort Wayne

The history of gifted education in the United States has been a roller coaster ride from
the beginning to the present. This research focused on a local school's gifted and
talented program and its relationship to the state and national programs. The purpose
of the research was to determine the reasons for starting a gifted and talented program
and to follow its development over time. The research was conducted by searching
IUCAT and ERIC databases for related books and articles, conducting interviews with
the three former teachers of the program, studying local newspaper articles, perusing
the Broad-Based Planning Committee's minutes, and visiting the Indiana Department of
Education Gifted/Talented Unit's website for information about each school's program in
the state. An analysis of the findings showed that the emphasis or lack thereof placed
on academically advanced students coincided with national events and crises.
Whitko Middle School: The Development of a Middle School Concept
Building 1988 - 1993
Michael S. Hanback
Sponsor: Kathleen Murphey
School of Education
Indiana University-Purdue University Fort Wayne

In January of 1993, in the middle of the school year, the Whitko Community School Corporation, a district straddling the line between Whitley and Kosciusko counties of Indiana, consolidated two junior high schools into one new building that, programmatically, was completely different from what had existed before. This paper examines this consolidation from two aspects: the facility and the philosophy change from a junior high program to a middle school concept. A local history project sparked the research through this school corporation’s board records and interviews with past Board members, administrators, and current teachers to examine the basics of what drove the construction of the physical plant. A preponderance of research in the mid 1980’s indicated that middle grades schools needed to change in order to better help their students reach their potential. Much of this research dictated how the building was designed. By examining this research, it is shown how a plan for middle grades education was envisioned and created for this middle school.
Historically, women have been excluded from the field of mathematics. Great strides have been made in this regard. This research was done to inform current and future teachers about the tendencies people might have to discriminate unknowingly against their female students. The information was gathered by searching the academic sources from EBSCO via the Helmke Library link on IPFW’s Website. Academic Search Elite and Professional Development Collection were the databases used. Eleven articles were retrieved and analyzed. Research shows that girls are more involved, but still lagging behind, in mathematics participation in the higher grades and professionally. Reasons for this are varied and speculated upon: girls have different solution strategies than boys; societies impact on which careers are considered female appropriate; textbook and historical examples of men further reflecting the male dominance of mathematics; etc. This information arms teachers with the knowledge that girls need to be encouraged in the field of mathematics. Some helpful hints include giving boys and girls equal opportunities for classroom participation, using textbooks that use both males and females in their illustrations, and including historical examples of women, as well as, men when referring to those that have impacted the field of mathematics. By knowing gender inequity still exists, teachers can take steps to ensure their students will have every opportunity for success in their classroom and, hopefully, in life.
EFFECTS OF MULTICULTURALISM ON THE ENGLISH LANGUAGE  
Erin L. Smith  
Sponsor: Sheena Choi  
School of Education  
Indiana University-Purdue University at Fort Wayne  

The education of children from bilingual, multicultural, and disadvantaged groups has frequently been a topic of political debate and controversy. What academic researchers and teacher educators see as the purpose and content of a multicultural education has evolved considerably over the years. Critics of multiculturalism believe that today it has a clear race-based political agenda, one that is anticivic and anti-Western in its orientation. This research argues that the survival of the English language does not hinge upon the successes of multicultural education, the materials used for that education, nor the repercussions of multicultural curricula. It also gives several perspectives on the urgent need for alternate texts and language use in the multicultural classrooms of today. The research was generated through books, trade journals, and resources found through the Department of Education ERIC database. These findings will be used in generating support for multicultural education and for the continued funding, training, and education of teachers and programs for multicultural education.
THE INVISIBLE URBAN CHILD
Luann P. Watson
Sponsor: Sheena Choi
School of Education
Indiana University-Purdue University Fort Wayne

Research shows that poor urban children often receive substandard education in unacceptable conditions. Findings indicate we have a largely invisible, poor urban population that is physically and psychologically isolated from the more visible, affluent, suburban communities. My research was compiled from primary documents, ethnology studies, and observation. The implications for the children, schools, and society are analyzed. Analysis of the readings and on-site observation supports earlier studies of a two-tiered education system prevalent in America. These findings will be beneficial to students and teachers studying urban education issues.
SCHOOL OF VISUAL AND PERFORMING ARTS
EXPLORING THE BENEFITS OF THREE DIMENSIONAL ILLUSTRATION
Curtis O. Swihart
Sponsor: Dennis Krist
Department of Visual Arts
Indiana University-Purdue University Fort Wayne

Technological advances in software creation and computing power have made three dimensional imagery a practical method of illustration. This research is for the purpose of demonstrating the overwhelming benefits that digital illustration provides when compared to traditional means. To understand this, both mediums were explored: the traditional style of illustration and the three dimensional method. Research showed that digital illustration is a medium that can realistically convey abstract concepts and designs to the viewer through the use of 3d space by creating a virtual interchangeable environment. Also, though the use of software, digital illustrations can now be manipulated to resemble traditional styles. These findings accurately demonstrate the practicality of three dimensional illustrations.
DIVISION OF PUBLIC AND ENVIRONMENTAL AFFAIRS
AN EXAMINATION OF CHILDHOOD IMMUNIZATION
Desiree Koger
Sponsor: Koichiro Otani
Division of Public and Environmental Affairs
Indiana University-Purdue University Fort Wayne

This paper examines the use of immunization in the United States. It will begin with an overview of immunization and why it's important. Data will be examined on childhood immunization. This will be used to determine the actual use of specific vaccines. Finally, a summary of data statistics will be offered.
I'M PAYING HOW MUCH FOR THIS? THE IMPACT OF CRIME ON THE RETAIL PRICE
CONSUMERS PAY
Michael E. Minnick
Sponsor: David May
Division of Public and Environmental Affairs
Indiana University-Purdue University Fort Wayne

Consumers often buy products without recognizing all the factors that contribute to the final price of an item. While consumers often realize that manufacturing, shipping, and store operational costs are all important in the item’s final price, they often are not aware of the impact of crime on the retail price of the item, primarily the price increase brought about from theft by customers. Use of surveillance, product tagging, and loss prevention specialists are all technological and operational improvements designed to prevent theft. Using data collected from a local electronic and appliance outlet, I will examine the economic impact of theft on the final cost of fifteen items over an eight year period. I will do this by comparing the price increase of each item with the inflation rate over that time, controlling for the costs of loss prevention. Preliminary results indicate that, for the majority of the items examined, loss prevention costs increased the price of the item above and beyond the natural inflation during that time period.
PREVALENCE OF CHEATING ON ANTABUSE IN A MIDWESTERN ALCOHOL TREATMENT PROGRAM
Sarah J. Mustard
Sponsor: David May
Division of Public and Environmental Affairs
Indiana University-Purdue University Fort Wayne

Drinking and driving has become an important focus in today's criminal justice system due to the increased emphasis on decreasing the number of offenders and the innocent lives taken as a result of this act. Many policies and laws have been passed in an attempt to reduce the number of drunk drivers. The Alcohol Abuse Deterrent Program (AADP) is a local organization whose goal is to keep alcoholics and convicted drunk drivers from consuming alcohol. AADP works with the criminal justice system by administering disulfiram (Antabuse) to offenders convicted of more than one alcohol-related offense. Using a sample of approximately 200 AADP clients, I examine the prevalence of cheating on Antabuse and its predictors. Preliminary results indicate that males and those who have been arrested more than once for operating while intoxicated (O.W. I.) are more likely to cheat on Antabuse than their counterparts. Implications and suggestions for future research are also discussed.
DOES WATCHING STRIPPERS MAKE ME MORE LIKELY TO BE A VICTIM OF CRIME?

Anthony M. Rose
Sponsor: David May
Division of Public and Environmental Affairs
Indiana University-Purdue University Fort Wayne

In Fort Wayne, Indiana, in the spring of 2001, a heated debate between the American Family Association (AFA), local business owners, and city officials has arisen regarding how to regulate sex-oriented businesses, particularly gentlemen’s clubs. One of the key tenets of the AFA argument is that gentlemen’s clubs have higher rates of crime than other clubs without exotic dancers. The purpose of this study is to examine the validity of that claim; in other words, do gentlemen’s clubs actually have higher crime rates than other taverns in the city? Using calls for service as the unit of analysis, we compare the number of police calls for service to gentlemen’s clubs with the number of police calls for service to a sample of other bars proximate to the gentlemen’s clubs. Preliminary analysis reveals that, with a few notable exceptions, there are few statistically significant differences between calls for service to the clubs in question. We suggest that this finding is due to the high cover charges and relatively expensive drinks, creating low alcohol availability and fewer intoxicated patrons in the gentlemen’s clubs. Implications and avenues for future research are also discussed.
THE EFFECT OF STRAIN THEORY ON VIOLENT BEHAVIOR
Melisa M. Sanchez
Sponsor: David May
Division of Public and Environmental Affairs
Indiana University-Purdue University Fort Wayne

Numerous researchers have proposed a number of explanations in an attempt to understand causes of violent behavior. One of the common explanations offered for this relationship is strain theory. Using data collected from 300 incarcerated juveniles in Indiana, I examine the impact of strain theory on violent behavior, controlling for demographic and contextual predictors of violence. Preliminary results indicate that, although gang membership and expulsions are better predictors of engagement in violent behavior, strain theory has a strong, statistically significant association with violent behavior as well. Implications of this finding for future research and policy decisions are discussed.
JUVENILE MENTORING: DOES IT REDUCE JUVENILE RECIDIVISM?
Sarah R. Stephenson
Sponsor: David May
Division of Public and Environmental Affairs
Indiana University-Purdue University Fort Wayne

Although the amount of juvenile delinquency has been dropping for some time now, school shootings such as the one at Santee, California continue to cause fear of juvenile crime among U.S. citizens. One of the reasons for this concern about crime is that many juveniles enter the system at a young age and often continue committing crimes into adulthood. Recently juvenile mentoring programs have emerged as another way to reduce recidivism among juveniles. In this paper I examine the effectiveness of A.I.M. (Aftercare by Indiana University through Mentoring) in reducing recidivism among juvenile offenders in Indiana. Preliminary results indicate that those juveniles sentenced to incarceration who fulfill the requirements of A.I.M. recidivate at lower levels than convicted youth who do not complete the A.I.M. program or who never experience the A.I.M. program. Implications of these findings are discussed.
THE IMPACT OF ATTACHMENT TO PARENTS ON WEAPON-RELATED DELINQUENCY
Keri L. Virgo
Sponsor: David May
Division of Public and Environmental Affairs
Indiana University-Purdue University Fort Wayne

In this study, I examined the causes of weapon delinquency using data from 318 residents of the Indiana Boys School. Respondents completed rating items assessing weapon related delinquency, perceptions of parental control, and a number of other factors that have previously demonstrated an effect on delinquency. The results indicate that parental control variables, previous expulsions, and gang membership have statistically significant positive associations with a weapon scale generated from the survey. The weapon delinquency scale is composed of responses to questions regarding carrying weapons other than guns, carrying guns, using weapons in crime, and firing guns at others. The analysis implies that parental controls are important components in reducing the risk of weapons delinquency.
SYMPOSIUM SCHEDULE
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| 9:15 - 10:15a.m. | Dodie M. Miller  
*Analysis of Pronoun Use in a Selected Text*  
Anthony M. Rose  
*Does Watching Strippers Make Me More Likely to be a Victim of Crime?*  
Erin L. Smith  
*Effects of Multiculturalism on the English Language*  
John L. Wait  
*The Case for Virtue in Marketing*  
Huntington College  | Michael E. Minnick  
*I’m Paying How Much For This? The Impact of Crime on the Retail Price Consumers Pay*  
Rya L. Morgan  
*Hazardous Materials in Visual Art Departments Pose Serious Threats*  
Sarah R. Stephenson  
*Juvenile Mentoring: Does It Reduce Juvenile Recidivism?*  | Steven G. Chen, Keith A. Egly  
*An Exploratory Analysis of the Value of Undergraduate Teaching Assistants for Students Taking Child Psychology*  
Doug M. Conner, Cami L. Herron, Miranda P. Goodman, Neil A. Leszinske, Jodi M. Teusch  
*"Was It Good For You?: Late Adolescents’ Satisfaction With School-Based Sex-Ed*  
Larisa Drozdova  
*Current Divorce Rate Among Hindu Population in India: Causes and Consequences*  |

*Unless otherwise indicated, the presenter is an IPFW student*

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**CHAIR:** Craig A. Hill  
Associate Professor of Psychology
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| 10:30 - 11:30 a.m. | Angelique D. Causey, Jason D. Sorg, Mehmet Sezginer  
The Impact of the Family Medical Leave Act | Steve K. George, Jan L. Wade  
The Cost of America's "War On Drugs" | Creative Writing  
Alison Eby  
What They Never Tell You |
|              | Donald R. Leer  
A Census and Evaluation of Invited Exotic Plants in Owenstown, Andros Island, Bahamas - 25 Years After Evacuation  
University of St. Francis | Farah Gosnell, Ruben Aguirre, George Raptis  
Career Paths: Women and Minorities' Selection of Occupations | Janene Hudson  
Reasons for the Unsearch |
|              | Corinne K. Meyer, Jason Bell, Shad Turner  
Invisible Students: Females in the Classroom | Jenna M. Harmeyer, Keith A. Egly  
Mothers' and Adolescents' Perceptions of Their Relationship: Shared or Divergent Realities? | Elizabeth Proctor  
Three Lyric Poems |
|              | Sarah J. Mustard  
Prevalence of Cheating on Antabuse in a Midwestern Alcohol Treatment Program | Dennis J. Junk, Carrie L. Giant, Rhonda M. Passino, Rene M. Dickerhoof, Keri Virgo  
"Hercules and Xena" or "Ken and Barbie": Males' and Females' Descriptions of the "Perfect Male" and the "Perfect Female" Bodies | Misty VanMeter  
Unraveling Life |

* Unless otherwise indicated, the presenter is an IPFW student

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<th>WALB 110</th>
<th>WALB 114</th>
<th>WALB 116</th>
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| 12:30 - 1:30 p.m. | POSTER PRESENTATIONS | Willard D. Barnhouse  
*Geochemistry of the McCaslin Formation with Comparison to Other Wisconsin Quartzite Bodies* |
| Amy E. Bixler, Rusty Coulter-Kern  
*Assessing the Impact of a College-Community Homework Tutoring Program*  
Manchester College | Christie E. Carney  
*Experimental Validation of Nonlinear Analysis of Rub-Related Vibration in Rotating Machinery*  
Indiana Institute of Technology | Katie M. Beard  
*Wetland Awareness: Results of a Campus-wide Research Survey at Indiana University-Purdue University Fort Wayne Campus* |
| Melisa M. Sanchez  
*The Effect of Strain Theory on Violent Behavior* | Robert R. Hoverman  
*Land Use Effects on the Little River Wetlands, Allen County, Indiana*  
Gordon Huffman, Peter Kowalenko, Abby Kozerski  
*Wavelength Dependent Photochemistry of Arylsulfonyl Azides*  
Curtis O. Swihart  
*Exploring the Benefits of Three Dimensional Illustration* | Ben R. Edwards  
*Frugal Construction of a Superior Digital Laser Power-Meter*  
Samantha McGlennen  
*Gender and Mathematics* |
| Keri L. Virgo  
*The Impact of Attachment to Parents on Weapon-Related Delinquency* | Luann P. Watson  
*The Invisible Urban Child* | CHAIR: David C. May  
Assistant Professor of Public and Environmental Affairs |
| CHAIR: George S. Mourad  
Associate Professor of Biology | CHAIR: Anne S. Argast  
Associate Professor of Geosciences |

*Unless otherwise indicated, the presenter is an IPFW student*
<table>
<thead>
<tr>
<th>Time</th>
<th>WALB 110</th>
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<tbody>
<tr>
<td>1:45 - 3:45 p.m.</td>
<td>Graduate Student Presentations</td>
<td>Graduate Student Presentations</td>
<td>SIGMA XI COMPETITION:</td>
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<tr>
<td></td>
<td>Jackie Butler</td>
<td>Charles M. Cole</td>
<td>Rene M. Dickerhoof</td>
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<td></td>
<td>Inclusion, Looping and ESL: What Works and What Lurks</td>
<td>The Renovation of South Side High School, Fort Wayne Indiana, 1993: A City Divided</td>
<td>Exploring Relations Among Positive Versus Negative Imaginary Audience and Personal Fable Ideations and Aspects of Adolescent Emotional Well-Being</td>
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<tr>
<td></td>
<td>Carolyn D. Cockey</td>
<td>Tracy Cox</td>
<td>Natalie L. Hyslop, Bruce A. Kingsbury</td>
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<td>Exploring the Information Needs and Habits of Women in the Health Care Market Place</td>
<td>Haverhill Elementary School: A History of Parents and Teachers Working Together</td>
<td>Spatial Ecology and Habitat Use of the Copperbelly Water Snake in a Fragmented Environment (Graduate Student)</td>
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<td></td>
<td>Rebecca S. Eddy</td>
<td>Amy S. Dankert</td>
<td>Desiree D. Koger</td>
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<td></td>
<td>The History of South Adams Schools' Gifted and Talented Program 1984-2000</td>
<td>The Experiences of O.D. &quot;Bud&quot; Ferguson as a Student in a One Room Schoolhouse Near French Lick, IN from 1924-1931: A Personal Account</td>
<td>An Examination of Childhood Immunization (Graduate Student)</td>
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<td>Michael S. Hanback</td>
<td>Michele R. Devinney</td>
<td>Bryn J. Pape, William DeMatt</td>
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<td>Whitko Middle School: The Development of a Middle School Concept Building 1988-1993</td>
<td>Born With Nothing and Better Off That Way: Bruce Springsteen's Evolving Hero</td>
<td>Effects of Phosphorus-Deficient Diets on the P-Balance of Laboratory and Field Populations of Daphnia</td>
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<td>John C. Marshall, Bruce A. Kingsbury</td>
<td>Timothy J. Miller</td>
<td>John H. Roe, William A. Hopkins, Tom Phillipi, Justin D. Congdon</td>
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<td>Movements and Macrohabitat Selection in Fen Wetlands by the Eastern Massasagua Rattlesnake</td>
<td>Drama is Doing: Adolescent Theatre-A Hands on Approach</td>
<td>Digestive Metabolism of the Banded Water Snake</td>
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<td>Kim A. Slack</td>
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<td>Incorporating Organic Dye into a Polymethyl Methacrylate Matrix for Solid Dye Active Medium</td>
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<td>The Effect of the recA Allele in the Complementation of Defective Bacteriophage Induction in Escherichia coli RecA Mutants Promoted by the Cloned T4 Bacteriophage UvsX Protein (Graduate Student)</td>
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* Unless otherwise indicated, the presenter is an IPFW student

CHAIR: Bruce A. Kingsbury
Associate Professor of Biology

CHAIR: David A. McCants
Professor of Communication

CHAIR: Elliott J. Blumenthal
Associate Professor of Biology
RESULTS OF THE 2001 SIGMA XI COMPETITION

First Place - Undergraduate

Co-Winners: Bryn J. Pape
Effects of Phosphorus-Deficient Diets on the P-Balance of Laboratory and Field Populations of Daphnia

Kim A. Slack
Incorporating Organic Dye into a Polymethyl Methacrylate Matrix for Solid Dye Active Medium

First Place-Graduate

Natalie L. Hyslop
Spatial Ecology and Habitat Use of the Copperbelly Water Snake (Nerodia erythrogaster neglecta) in a Fragmented Environment

Judges:

Carla R. Barrett
Supervisor, Life Sciences Resource Center

Elliott J. Blumenthal
Associate Professor of Biology

Robert B. Gillespie
Associate Professor of Biology

Steven A. Kuhl
Assistant Professor of Biology

David A. Legg
Professor of Mathematical Sciences

Vincent M. Maloney
Associate Professor of Chemistry

Chair of the Competition:

Elliott J. Blumenthal
Associate Professor of Biology
### TABLE A

**PRESENTATIONS BY COLLEGE/UNIVERSITY**

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# TABLE B

## PRESENTATIONS BY TYPE

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Subtotal 38 (U)
Subtotal 13 (G)

Total 51
### TABLE C

**IPFW PRESENTATIONS BY SCHOOL AND DEPARTMENT**

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