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4th Annual Governors State University Student Research Conference Proceedings

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4th Annual GSU Student Research Conference

Friday, May 29, 1998
Proceedings of the 4th Annual GSU Student Research Conference

Governors State University
University Park, IL 60466

May 29, 1998

Editor: Shelly Kumar
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May, 1998

Dear Conference Participant,

Welcome to the Fourth Annual Governors State University Research Conference. We are pleased you have chosen to share with the academic community the product of your research. By demonstrating the creation of new knowledge, you are participating in the esteemed tradition of higher education and helping to expand the intellectual reaches of humankind. This contribution is of profound and long-lasting significance, since it causes us to move forward as a society toward better understanding in many fields.

Congratulations to you and your faculty colleagues who have prepared you to participate today. We are proud and honored to have you as a member of the Governors State University community. We value your contribution today and look forward to following your successes in the future.

Thank you for participating.

Sincerely,

Paula Wolff
President
A MESSAGE FROM THE CONFERENCE STEERING COMMITTEE

The steering committee is pleased to announce the 4th Annual GSU Student Research Conference to be held on May 29, 1998. The first three conferences were successful with back to back presentations from 9 A.M. to 5 P.M. What made these conferences even more exciting is the fact that quality of the presentations were at par with presentations at any professional conferences. We are confident that today again we will witness another session of quality presentations by our students. This conference will be presented in its original format and with its original objectives:

1. To provide students an opportunity to present their research work before an audience of their peers, and to use the comments they receive to improve presentations made at professional conferences.

2. To provide a forum to highlight research accomplishments at GSU, and honor students presenting their research work.

3. To generate enthusiasm among student body in general, and encourage them to pursue research and other scholarly activities.

4. To enhance communications in the area of research among the four colleges at GSU. The interactions may also lead to collaborative work among students and faculty of different colleges.

5. To enhance the image of GSU in the area of teaching, as research is considered integral part of teaching at the university level. In the long run larger number of students attracted toward research would enroll at GSU to pursue higher education.

The committee hopes that you will enjoy the conference, that you share in the excitement of doing research, and that you will look forward to participating in the future students and professional conferences.
The Student Research Conference Steering Committee is proud to announce that the keynote speaker for the lunch will be:

**Dr. Stanley Smith**

Professor of Chemistry and Chemical Education  
University of Illinois, Urbana-Champaign, IL

who will present a talk titled

"Instructional Computing from Mainframes to the Web"

Dr. Stanley Smith received his B.S. degree from the University of California, Berkeley, in 1953 and after two years in the army, a Ph.D. from UCLA in 1959. In 1960 he joined the faculty at the University of Illinois where he is currently Professor of Chemistry and Chemical Education. In 1990 he was appointed Jubilee Professor in the College of Liberal Arts and Sciences, and he holds the Murchison-Mallory Chair in Chemistry.

Dr. Smith's chemical research has focused on organic reaction mechanisms. In addition to traditional chemical research, he has been a pioneer in computer-based instruction in chemistry for over three decades and has developed a large number of instructional programs for teaching general and organic chemistry on the University of Illinois PLATO system and several microcomputers. The microcomputer software co-authored by Ruth Chabay and Elizabeth Kean have received the Learning Periodical Group Award for the Best Microcomputer Software of the Year, 1983 and the EDUCOM/ENSCRIPTAL Best Tutorial Software award in 1987. The videodisc based multimedia instructional software developed with Loretta Jones has received the EDUCOM/ENSCRIPTAL awards for Best Chemistry Software in 1987 and Best Integrated and Best Chemistry Software in 1989. Dr. Smith is a fellow of the Association for the Development of Computer-Based Instruction, and has received the Chemical Manufacturing Association Catalyst Award in 1987, the IBM EDUCOM Robinson Award in 1992, and the George C. Pimentel Award in chemical education from the American Chemical Society in 1998.
INSTRUCTIONAL COMPUTING FROM MAINFRAMES TO THE WEB

Stanley Smith

Professor of Chemistry and Chemical Education
University of Illinois, Urbana-Champaign, IL

ABSTRACT

Instructional computer programs developed on mainframe computers in the 1970s tended to focus on a detailed analysis of students' typed responses to a series of questions. The questions were specifically designed to develop an understanding of concepts and provide practice in working problems. The focus of early computer programs on typed responses was necessary because computer displays were limited. Simple line drawings were used to represent complex systems. These tutorials were greatly enhanced when microcomputer technology made it possible to overlay traditional tutorials with video images from videodisc players and later with still and motion digital images delivered on a local area network. Allowing students to interact with images of real systems produced a visually intensive instructional environment. WEB based systems, with nearly universal access to document-based material, provide a way to future enhance the content to tutorial systems with on-line lecture notes, discussion groups, and quizzes. New types of interactive systems are being developed which make use of the document delivery capabilities of the WEB coupled with dynamic response to student input with DHTML. Some examples of these kinds of systems will be demonstrated.
PROGRAM SUMMARY

Engbretson Hall:
8:30 – 9:00 A.M.  Conference Registration
9:00 – 9:20 A.M.  Welcome and Introduction
9:20 – 10:20 A.M. Podium Presentations (3)
10:20 – 10:40 A.M. Refreshment Break
10:40 – 12:00 Noon Podium Presentations (4)
Hall of Governors:
12:00 Noon – 12:45 P.M. Lunch
Engbretson Hall:
12:45 P.M. – 1:00 P.M. Greetings and Introduction of Speaker
1:00 P.M. – 1:30 P.M. Keynote Speaker, Dr. Stanley Smith
Hall of Governors:
1:30 P.M. – 2:00 P.M. Mixer and Poster Presentations
Engbretson Hall:
2:00 P.M. – 3:20 P.M. Podium Presentations (4)
3:20 P.M. – 3:40 P.M. Refreshment Break
3:40 P.M. – 5:00 P.M. Podium Presentations (4)
5:00 P.M. – 5:05 P.M. Concluding Remarks
CONFERENCE PROGRAM

Conference Registration

8:30 A.M. Hall of Governors

Program Commencement

9:00 A.M. Engbretson Hall

Welcome and Introduction:
Dr. Shelly Kumar
Division of Science
College of Arts and Sciences

Greetings:
Dr. Tobin Barrozo
Provost

Podium Presentations

Engbretson Hall

Session I Moderator:
Dr. Frances Kostarelos
Division of Liberal Arts
College of Arts and Sciences

9:20 A.M. “AFFORDABLE HOUSING FOR IMPROVISED FAMILIES”.
Dianne Kronika, Frances Kostarelos*, Social Sciences, CAS.

9:40 A.M. “THE DETERMINATION OF NITRATES IN FERRIC
SULFATE”, Sheila St. Amour, Gregory A. Moehring*, Analytical
Chemistry, CAS.

10:00 A.M. “MARRIAGE AND FAMILY COMMUNICATION”. Christian F.
Hagn, Art History, CAS.

10:20 A.M. Refreshment Break

Session II Moderator:
Dr. Akkanad Issac
Division of Management, Marketing, and Public
Administration
College of Business and Public Administration

10:40 A.M. “CAN THE ELDERLY SURVIVE HMO MEDICAL CARE?”.
Pamela Pitts, Clementine Coleman*, Health Administration. CHP.

11:00 A.M. “ROLE OF ILLEGAL DRUGS IN WOODLAWN & ITS IMPACT
ON THE DECLINE OF THE COMMUNITY”, Anthony Hayes,
William Toner*, Public Administration. CBPA.
11:20 A.M.  
"THE INTERNET AND TELEVISION NEWS", Barbara A. Oliver, Media Communications, CAS.

11:40 A.M.  
"THE USE OF CACHE COMPUTATIONAL SOFTWARE IN ESTABLISHING RELATIONSHIPS BETWEEN ENERGY LEVELS AND TOXICITY FOR CARBAMATE PESTICIDES", Alexandra Kuch, Joseph A. Addison*, Analytical Chemistry, CAS.

Conference Lunch  
Hall of Governors and Engbretson Hall

12:00 P.M.  
Lunch

12:45 P.M.  
Greetings and Introduction of Speaker:  
Dr. Paula Wolff  
President  

Keynote Speaker  
Dr. Stanley Smith  
Professor of Chemistry and Chemical Education  
University of Illinois, Urbana-Champaign, IL  

speaking on  

"Instructional Computing from Mainframes to the Web"

Mixer and Poster Presentations  
Hall of Governors

1:30 P.M.  
"SEED BANK ECOLOGY OF BUTTERFIELD CREEK ALONG OLD PLANK ROAD TRAIL, ILLINOIS", Holly Bauer, Deann C. Grossi, Matthew S. Lake, Peter Gunther*, Environmental Biology, CAS.

"SYNTHESIS OF AN HPLC STATIONARY PHASE FOR SEPARATION OF FULLERENES", Curtis L. Gurnea, Shailendra Kumar*, Analytical Chemistry, CAS.

"HEADSPACE ANALYSIS OF CHLORINATED VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER", Mary S. Quinn, Gregory A. Moehring*, Robert W. Peters (Argonne National Laboratory), Analytical Chemistry, CAS.

"THE EFFECTIVENESS OF HIV/AIDS INTERVENTION CAMPAIGNS IN HIGH-RISK INDIVIDUALS", Louis A. Sadnick, Communications, CAS.
Podium Presentations

Session III Moderator:
Dr. Linda Buyer
Division of Psychology and Counseling
College of Education

2:00 P.M.  "HEALTH AND POVERTY IN THE AFRICAN-AMERICAN COMMUNITY...AND THE DISPARITIES PERSIST", Christa Black, Clementine Coleman*, Health Administration, CHP.


2:40 P.M.  "COYOTE HOME RANGE SIZES AND MOVEMENT PATTERNS IN WILL COUNTY AND ADJACENT COUNTIES, NE ILLINOIS", Charles Roth, C. Edward Miller*, Environmental Biology, CAS.

3:00 P.M.  "THE ROLE OF COMMUNICATION ON HEALTH: DISEASE PREVENTION, TREATMENT, AND HEALTH PROMOTION", Maureen McCluskey, Communications, CAS.

3:20 P.M.  Refreshment Break

Session IV Moderator:
Dr. Carolyn Fraser
Division of Nursing and Health Sciences
College of Health Professions

3:40 P.M.  "COMPUTER SCREEN DESIGN FOR INSTRUCTION", Jeffrey Easley, Mary L. Lanigan*, Communications and Training, CAS.

4:00 P.M.  "AMERICAN INDIANS TAKING TECHNOLOGY ROAD TO THE 21ST CENTURY", Denise Graham Zahn, Eli Segal*, Media Communications, CAS.

4:20 P.M.  "MATCHING EDUCATION REQUIREMENT FOR FLOSSMOOR POLICE RECRUITS WITH COMMUNITY NEEDS", William M. Miller, William Toner*, Public Administration, CBPA.

4:40 P.M.  "EAST CHICAGO: THE TWIN CITY BLOOMS, BUSTS AND BAILS", Janine R. Harrison, William Bolive*, Undeclared, CHP.

5:00 P.M.  Concluding Remarks
Dr. Shelly Kumar
ABSTRACTS OF PAPERS

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Governors State University
University Park, Illinois
PODIUM PRESENTATIONS
AFFORDABLE HOUSING FOR IMPOVERISHED FAMILIES

Dianne Kronika, Frances Kostarelos*

Social Sciences
Division of Arts, CAS

ABSTRACT

As the gap between incomes of Americans has increased, the disparity has also increased between the amount impoverished families can afford to pay for housing and the availability of housing within those limits. Many factors have contributed to this situation, including increases in costs of housing, declines in the quantity of housing units available within an affordable range, reductions in real wages over time, and changes in governmental regulations.

History suggests that the division finds its roots in the deindustrialization of the American economy and government spending cuts, particularly during the Reagan administration. Some experts suggest that the Clinton administration may see greater increases in homelessness. Many experts have offered policy suggestions to alleviate the problem. This paper considers these issues and the attitudes and values inherent in American policies toward the poor.

This issue affects all Americans, whether low, middle, or high-income, since the effects will determine the future of one-third of the population directly. The consequences for the remaining two-thirds of the population could also be detrimental.
THE DETERMINATION OF NITRATES IN FERRIC SULFATE

Sheila St. Amour and Gregory A. Moehring*

Analytical Chemistry
Division of Science, CAS

ABSTRACT

Ferric Sulfate and other iron salts are used in water treatment. Eaglebrook, Inc., a local company, prepares ferric sulfate using a process which includes nitric acid. The use of nitric acid means that the nitrate ion may be present in the resultant product. The concentration of nitrate ion in ferric sulfate must be controlled. It was necessary to develop a method to determine the concentration of the nitrate ion in ferric sulfate. The method developed needed to be easy, quick, and accurate.

Three analytical methods for the determination of nitrate were investigated. One method involved an ultraviolet spectrophotometric screening method. A second method involved a titrimetric determination using ferrous sulfate as a reducing agent. The third method investigated was also a titrimetric determination; one in which cadmium was used as the reducing agent. This paper presents the results of our investigation.
MARRIAGE AND FAMILY COMMUNICATION

Christian F. Hagn

Communications and Training, College of Arts and Sciences

ABSTRACT

My presentation incorporates major conclusions in some twenty current research articles that I analyzed.

When two people decide to make the lifelong commitment of marriage, they have a complex journey ahead of them. Conflicts and marital problems will arise throughout the relationship. It is up to each spouse to work together with the one they love to resolve the conflict in a positive manner through open communication, which involves listening, compassion, compromise, and mutual respect. The research conducted by Kaslow, F. And Robinson, J.A. (1995), proved that long term marriages which are successful have a variety of qualities. For example, the top three factors to a satisfying marriage included: love, mutual trust, and mutual respect. It was also determined that elements, such as honesty and the expressions of affection, helped the relationship through the stresses and conflicts which occur throughout the years of marriage. Once the husband and wife share their love for each other, we see the creation of children.

When a couple decides to have one or more children, they must fulfill the role of parents. No one said that being a parent is easy. In fact, many parents feel that it is a full time commitment in itself and it should be. Children look up to their parents for love, guidance, compassion, and respect. Parents must have a great amount of patience and be able to present a positive image at all times because their children view them as their role models. It is important to raise a child with good beliefs and values at an early age. Bad habits can easily be learned by the children as they observe their parents, unless they are taught what is right and wrong through love, kindness, and positive reinforcement. In the research study conducted by Freitag, M.K., Belsky, J., Grossman, K., Grossman, K.E. & Englisch, H.S. (1996), it was proven that parents who established a close personal relationship with their children at an early age found that they displayed a stronger connection with their parents throughout their stages of life.

Communication must be present in both the marriage and the family in order to create and maintain a stable marital and family environment.
CAN THE ELDERLY SURVIVE HMO MEDICAL CARE?

Pamela Pitts, and Clementine Coleman*

Health Administration
Division of Health Administration and Human Services, CHP

ABSTRACT

The healthcare delivery system has undergone tremendous change since the inception of Medicare and Medicaid in the 1960s primarily due to the burgeoning payments required for the elderly and uninsured. Even our present system of managed care is constantly evolving as the "Baby Boomers" near retirement and demand more control and protection for the quality of care they receive in HMO managed care plans. As the population ages, increased inpatient services in healthcare facilities will be experienced. HMO managed care plans are seen as a solution to slowdown this consumption of inpatient medical services as it manages the cost of health care coupled with providing access to care as well as monitoring the quality of care received. But are HMOs capable of providing quality care to our elderly population with chronic medical illnesses?

HMO organizations are best suited to provide periodic health screenings, education on lifestyle changes, and continuity of care all of which can have a major affect on positive health outcomes for the elderly. Additionally, studies have found that customer satisfaction is high among Seniors enrolled in managed care health plans. However, despite high levels of customer satisfaction the healthy subject remained healthy under HMO care, and those with chronic illnesses noticed greater deterioration in health status than those in Fee For Service systems.
ROLE OF ILLEGAL DRUGS IN WOODLAWN & ITS IMPACT ON THE DECLINE OF THE COMMUNITY: AN ORAL HISTORY

Anthony Hayes, Wm. Toner*

Master of Public Administration
College of Business and Public Administration

ABSTRACT

Illegal drugs have had a major impact on the decline of the Woodlawn community. Currently, Woodlawn is infested with various levels of drug activity ranging from small marijuana sales to major crack rings. During the process of studying the community, I learned that many residents have thought about the problems facing the community and developed possible solutions resulting from their strong ties to the community. I located most of the residents interviewed through neighborhood block clubs and CAPS meetings. During the interviews, most of them reflected on how Woodlawn used to be and what steps must be taken to achieve that type of environment again.
THE INTERNET AND TELEVISION NEWS

Barbara A. Oliver
Media Communications
College of Arts of Sciences

ABSTRACT

There is a need to study the Internet’s effect on traditional news media to add to the general body of knowledge that questions how the majority of Americans will get their news in the 21st century. This paper examines the impact of a new medium, the Internet, on broadcast television news.

The popular belief is that the Internet is poised to become the leading source of news in the next decade, replacing television, which is currently the news leader. The data cited in this report reveal that there is very little evidence to support that belief. Research figures indicate that the number of Internet news users is far less than the number of television news users. The data also indicate that Internet news users have not abandoned traditional media, and are alternately using print and broadcast media in addition to the Internet.

However, despite indications that Internet news use has had no significant impact on television news use, research reveals that the television news audience is declining. Although a variety of reasons are cited for the decline, the greatest decrease is detected among computer users who say they go online to get news they used to get from print and broadcast. Still, research indicates that at the present time, broadcast television remains the leader when it comes to news.

The author concludes that the Internet will not replace television as the leading source of news within the next decade. However, television news organizations will continue to use the Internet to enhance their news presentations. This study also acknowledges that with the rapid change in technology, research figures may become obsolete in the next five years.
THE USE OF CACHE COMPUTATIONAL SOFTWARE IN ESTABLISHING
RELATIONSHIPS BETWEEN ENERGY LEVELS AND TOXICITY FOR
CARBAMATE PESTICIDES

Alexandra Kuch and Dr. Joseph Addison*
Analytical Chemistry
Division of Science, CAS

ABSTRACT

CAChe is a computer software program that can be used for the molecular
modeling and computational analysis of chemical compounds. It allows one to
create three-dimensional representations for compounds, as well as allowing one
to perform various mathematical experiments on them. These experiments can
provide information about the reactivity of a compound.

In this project, CAChe will be used to complete an extended Huckel
calculation for carbamate pesticides. This type of experiment generates two
important parameters: total energy and extended Huckel energy. These terms
relate to the amount of energy present in the molecular orbitals of a compound.
A relationship between these parameters and the relative toxicities of carbamate
pesticides (as indicated by oral LD$_{50}$ for rats) will be established. This
relationship will be useful as a means for predicting the relative toxicity levels for
new carbamate pesticide compounds that may be developed, prior to doing any
time-consuming clinical trials. It may also have potential applications for
examining the relative toxicities of other classes of pesticides and for other types
of compounds, such as anti-cancer agents.
Over the past twenty years, the health care industry in the United States has become an important entity of the economy. It is a multi billion-dollar industry. The number of physicians and health care workers has increased drastically in regards to size, complexity of technology, and medical institutions. As a result, the cost of health care has dramatically increased and despite these advances, there are still disparities in health status between blacks and other racial/ethnic groups. 

Braithwaite and Taylor (1992) researched that 80,000 more minority persons than whites die each year. Factors such as income, education, occupation, environment, and access to services impact health status. The health gap between blacks and whites has been linked to these factors. We will explore these factors as they relate to adverse birth outcomes, specifically, infant mortality and low birth weight. This research will attempt to answer these main questions posed: what is the nature of the perceived health problem, what is the extent of the problem, what causes such a health care problem, what is the target population, what is the proposed solution, and what are the expected or unexpected side-effects?

We can readily see that the health status of the African-American community is at risk. A serious challenge lies before us as health care administrators. Effective actions will be necessary for us to make a positive change.
SYNTHESIS OF TOLUENE DEGRADATION PRODUCTS

M.T. Benson and K. D'Arcy*

Analytical Chemistry
Division of Science
College of Arts and Sciences

ABSTRACT

Toluene is a solvent found in clean air at concentrations of 0.4 ppb. In smog, the concentration has been found to be 1 to 50 ppb. It is released through paint, printing presses, gasoline, and industrial manufacturing. The atmospheric decomposition of toluene in smog chambers has been studied over the past three decades. Several compounds have been theorized to be decomposition products. Previous work used spectral data to support the theorized decomposition products. All of these compounds have yet to be synthesized by alternative means and characterized for confirmation of smog chemistry theories.

The research conducted by the above authors is aimed at the synthesis of two compounds by an alternative method. The synthesis of muconaldehyde and 6-oxo-2,4-heptadieneal has been attempted. The muconaldehyde was synthesized to confirm prior art. The synthetic route involves three reactions. The first, is the oxidation of acetone to dimethyldioxirane (DMD). The second step is reaction of DMD with furan to form 2-butenedial. The 2-butenedial is finally reacted with an appropriate Wittig reagent to form the desired product.

Analysis of the products will performed by NMR, IR, MS, and UV-VIS spectra interpretation. The results of this research will help give a better understanding of smog chemistry as related to toluene.
COYOTE HOME RANGE SIZES AND MOVEMENT PATTERNS IN WILL COUNTY AND ADJACENT COUNTIES, NE ILLINOIS

Charles Roth and C. Edward Miller*

Environmental Biology
Division of Science, College of Arts and Sciences

During the past decade, Coyotes (Canis latrans) have recolonized northeastern Illinois, offering an excellent opportunity for study of these large predators. Between November, 1994 and January, 1996, 19 coyotes were trapped and fitted with radio-collars, allowing their activities to be tracked. Eleven animals were monitored for at least a full year, longer than in most previous studies. Two animals were monitored for at least two years. Results found no significant differences in home range size between males and females, or between the two years of study. Of the coyotes tracked for more than a year, six showed sizable shifts in core use areas over time (mean shift 4.2 miles, SD 1.9 miles), increasing estimated home range size, on the average, by 123%. Overall, the findings suggest that individual coyotes may be less attached to specific, familiar areas than previously believed. This may help to explain the ability of these animals to quickly colonize new areas. Geographical Information System (GIS) software is being used to examine spatial distributions and movement patterns of the animals studied.
The Role of Communication on Health: 
Disease Prevention, Treatment and Health Promotion

Maureen McCluskey Communications, CAS

Although communication scholars have engaged in applying their expertise to health promotion and disease prevention activities for many years, the field of health communication began to take off as a recognizable and coherent intellectual enterprise only about 25 years ago. Most people consider the launching of the Stanford Heart Disease Prevention Program in 1971 as the most important single turning point in the beginning of health communication. This program was based on the application of social learning theory, social marketing strategies, and on strategies drawn from the diffusion of innovations. These three theoretical frameworks have remained as the main bases for health communication interventions.

The objective of my research was to explore the present status and future prospects for the health communication field. In what important ways is the health communication field different from other specialties in communication study? Some of the important differences concern (a) the dependent variables of study; (b) the collaboration with schools of public health, medicine and marketing and (c) the research methods that are used in health communication research.

The main dependent variables of study in health communication are of unquestioned good. HIV/AIDS prevention, substance-abuse prevention, improved doctor-patient communication, the effectiveness of media advocacy, avoiding unwanted pregnancy, smoking cessation, early detection of cancer and the prevention of drunk-driving accidents.

Another unique aspect of the health communication field is the high degree of collaboration, as well as who health communication scholars collaborate with. Health communication scholars work closely with other social scientists, professors of medicine and public health scholars as well as marketing professors and practitioners.

Health communication research is also distinct from most other communication research in the degree to which field experiments are used as a basic research design. Both field experiments and focus groups interviewing are especially appropriate in health communication research because of its fundamental interest in improving health, rather than just improved understanding of health problems.

The research reviewed describes the field of health communication today as one characterized by growths and vigor, establishment in numerous strong communication schools, action oriented and unique among communication specialty fields in its degree of collaboration with other disciplines and in certain methods it uses. Health communication is well funded, soundly established and is well respected by the parent disciplines of communication and by health agencies and programs with which it works. Finally, the health communication field offers useful lessons in how an academic specialty can intervene effectively in real-life problems.
COMPUTER SCREEN DESIGN FOR INSTRUCTION

Jeffrey Easley, Dr. Mary L. Lanigan*

Communications and Training
Division of Liberal Arts, CAS

ABSTRACT

Using the computer as an instructional tool has become more commonplace in today’s home, school, and business environments. Designers of computer based training programs need to be cognizant of good, sound computer screen design principles. Poorly designed computer screens can often frustrate and intimidate learners, thus impeding the learning process. Well designed computer screens will encourage improved performance and help to maintain user interest.

As part of program requirements for the masters degree in Human Performance and Training at Governors State University, a survey of the research literature on computer screen design was undertaken. The purpose of the literature search was to investigate the attributes of “good” computer screen design.

The work to be presented today represents a summary of the key findings from the literature search on computer screen design. This includes the major attributes of color, typography, and screen layout. Other important attributes such as message design and graphic design will also be briefly discussed. The presenter’s computer based training masters project will be used to illustrate some of these attributes.

The significance of computer screen design research becomes evident when we ask ourselves the question, “did learners learn what we wanted them to learn?”. Learning does not solely depend on good computer screen design. However, good computer screen design will help to reduce processing overhead for learners, allowing them to focus attention on key aspects of a given lesson. Continued research in this area will help to further build psychological, instructional, technological, and aesthetic foundations.
American Indians Taking Technology Road to the 21st Century

Denise Graham Zahn, Eli Segal*

Media Communications
College of Arts and Sciences

ABSTRACT

Who are contemporary American Indians?

That is the question I attempted to answer through an examination of the media they are using to propel themselves into the second millennium. By practicing self-direction, contemporary American Indians are choosing their own roads rather than following the paths others have laid for them. Technology Road is the way, but the way is marked by tradition and culture.
MATCHING EDUCATION REQUIREMENT FOR FLOSSMOOR POLICE RECRUITS WITH COMMUNITY NEEDS.

William M. Miller, Wm. Toner*
Master of Public Administration
College of Business and Public Administration

ABSTRACT

The current minimum level of education required for police applicants is a high school diploma or its equivalent. The Illinois Legislature recently passed a bill which allows local police and fire commissioners to set the minimum level of education for applicants at either a two year college degree or a four year degree. I believe this gives small communities more authority to tailor public policy regarding applicant requirements to their individual community. I will survey the attitudes of residents of Flossmoor, police officers that work for the village, and police chiefs relative to the issue of police hiring. The goal of the survey is to provide the fire and police commissioners with information they can use in setting an applicant education standard.
While employed as an English composition instructor at Purdue University Calumet, in Hammond, Indiana, a community adjacent to East Chicago, Indiana, I read essays and listened to my students as they narrated stories of East Chicago, common themes of which entailed gang violence, drugs, stealing, teenage pregnancy, and political corruption, interwoven with a tremendous amount of ethnic pride. The combination proved intriguing. Later, I grew to become close friends with a Puerto Rican family who resides there. My participant observation of both my students and this family has served as the impetus for a geographical community study of East Chicago, which I completed for Social Work 530: Urban Dynamics, instructed by William Boline.

The study focuses on both understanding the culture of East Chicago, a socioeconomically disadvantaged, primarily minority community, as well as examining its treatment of the adolescents and young adults within. To accomplish these goals, I investigated the physical setting, history, demography, and cultural setting of the twin city, and its subsystems, including: economic, political, educational, social-cultural, and human service.

East Chicago is an unusual community due to its high percentage of industry and ethnic make-up, being that it is comprised of 47 percent Hispanics with African-Americans and Caucasians almost evenly splitting the remaining two-thirds of the populous. The value of this geographic community study lies in terms of application in the community, itself; in similar communities; and in mass society with regard to the providing of assistance from and the contributing to bodies of knowledge within social service institutions.
POSTER PRESENTATIONS
SEED BANK ECOLOGY OF BUTTERFIELD CREEK ALONG OLD PLANK ROAD TRAIL, ILLINOIS

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ABSTRACT

We analyzed the composition and biological integrity of a seed bank in a wetland that is physically divided by a nature trail in the Butterfield Creek flood plain, Matteson, Illinois. The relative differences and associated patterns of seed bank composition in an area that is degraded, fragmented, or partially intact, may be one mechanism in the determination of vegetation structure in wetlands. Core samples were taken from a divided wetland in the flood plain of Butterfield Creek. The wetland was divided by the preexisting railroad of the early European settlement. A total of 10 cores were taken from each wetland at three different depths in the soil strata, 0-6, 7-12, and 13-18 inches respectively. The cores were randomly placed on a growth table, and exposed to continual light, oxygen, and water. Germination occurred very rapidly as result of exposing the seed bank to light and oxygen. The majority of seedlings present in the seed bank were allowed to mature into adults so that species could be identified. Comparisons of north versus south for all vegetation at the lower soil core levels indicate that the seed banks may be equivalent to one another in terms of historical community structure, prior to the development of the railroad. A completely different analysis of the seed bank included only the hydrophytic vegetation, where the opposite result occurred in seed composition and dynamics, indicating relationship patterns at the uppermost levels. Nevertheless, when taking into account all the vegetation, or singly just the hydrophytes, the seed bank examined here is not a haphazard mix of seeds, but, an intact community of species associations preserved by genetic dormancy mechanisms.
SYNTHESIS OF AN HPLC STATIONARY PHASE FOR SEPARATION OF FULLERENES

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ABSTRACT

The toluene extract of the soot produced by vaporization of graphite contains soccerball-like molecule buckminsterfullerene (C₆₀) and larger fullerenes (C₇₀, C₇₆, C₇₈, C₈₄, etc.) — the most abundant being C₆₀. Various chromatographic techniques have been applied for separation of these unique molecules possessing hollow structures.

This project is directed toward separation of various fullerenes by High Performance Liquid Chromatography (HPLC). Stationary phases commonly employed for reverse phase or normal phase chromatography are not suitable for these all-carbon molecules. In this project we are developing methods to synthesize a stationary phase which will be suitable for separation of these fullerenes. We plan to attach chloronaphthyl groups to an amino propyl silica 5 µ stationary phase by amide linkages. As a model for this synthesis we are attaching propyl amine to 4-chloro-1,8-naphthalic anhydride. Base catalyzed hydrolysis of the resulting amide and infrared spectroscopy are being used for the identification purpose.
HEADSPACE ANALYSIS OF CHLORINATED VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER

Mary S. Quinn, Gregory A. Moehring, and Robert W. Peters (Argonne National Laboratory)

ABSTRACT

An analytical method for quantitative determination of carbon tetrachloride (CCl₄), trichloroethylene (TCE), and tetrachloroethylene (TCE) was developed in conjunction with an ongoing project at Argonne National Laboratory entitled “Use of Sonication for In-Well Softening of Semivolatile Organic Compounds.” Common gas chromatographic methods for analysis of volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) in water use purge and trap or pentane/hexane extraction and liquid injection of the extractant. Equilibrium headspace analysis was used as a fast and simple alternative.

A Hewlett Packard 7694 Automatic Headspace Sampled was used with a HP 5890 gas chromatograph. 1 mL aqueous samples in 10 mL glass headspace vials were equilibrated for 10 minutes at 70°C to increase analyte concentration in the vapor phase, and therefore sensitivity of headspace analysis. Flame ionization detection gave quantitation limits of 0.1 ppm for CCl₄, 0.03 ppm for TCE, and 0.02 ppm for PCE; ideal for the analytical range of this project (0.1 to 100 ppm). Electron capture detection gave excessive sensitivity, and detection to the low ppb range.

Maximum sample holding time was determined by preparing and analyzing known-concentration standards held over timed intervals. Of interest was the difference in sample loss from the sealed vials over time, with rate of loss of PCE>TCE>CCl₄.
The Effectiveness of HIV/AIDS Intervention Campaigns in High-Risk Individuals

Louise A. Sadnick Communications, CAS

Abstract

HIV/AIDS intervention campaigns and programs have greatly increased since this epidemic has come into the forefront. HIV/AIDS has proven to be an issue which we all must face as well as have an understanding of, so that the proper measures can be taken to stop the transmission of this life threatening disease.

The research I conducted explored HIV/AIDS intervention campaigns and programs which have been the subject of several studies during the past fifteen years. The focus of my research was on both females and males between the ages of 18-35 because of the increasing mortality rate within this age group due to HIV/AIDS and complications surrounding the disease.

The dependent variables which were examined through the different research studies consisted of the effectiveness of intervention campaigns, the use of condoms, communication among sexual partners, and the use of abstinence to avoid the transmission of HIV/AIDS. The use of questionnaires and surveys were instrumental in demonstrating how effective these campaigns have been in increasing individuals knowledge about HIV/AIDS as well as increasing the use of safe sex techniques. The results of the studies I examined primarily showed that HIV/AIDS knowledge is increasing while the use of safe sex techniques are still at a low point.
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