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Ergonomics in Education

By Cheryl Bennett

This article addresses the issue of ergonomics improvements in educational settings for children. I begin with news about recent legislation in New Jersey and then discuss areas where further improvement is needed.

New Jersey's New Commission

During this school year, New Jersey public school students and the educational environment in which they study will be the focus of the first legislated examination of ergonomics in schools. Assembly Bill 545/S1495 passed in March 2003 and was signed by New Jersey Governor James E. McGreevey in May. Initiated by Anne Hainsworth, who has a repetitive motion disorder, this bill calls for the creation of an Ergonomics in Education Study Commission.

This is a triumph for the human factors/ergonomics discipline. Integrating ergonomics into public school curricula is a direct way to raise awareness about ergonomics among the general public and, significantly, among the future workforce.

The Ergonomics in Education Study Commission will be tasked with determining how to integrate ergonomics into the curricula, as well as examining ergonomics issues, including the types and severity levels of injuries associated with ergonomically unsound study environments and study practices. The commission will be composed of medical professionals such as a pediatrician, a physical therapist, and an occupational therapist working with representatives of school boards, as well as representatives of education, principal, and teacher associations.

The commission will look at ergonomics design standards for current and future school facilities and standards for study equipment, computers, and furniture. Research in the United States and other countries has found a mismatch between classroom furniture and the students who use them. Australia, Chile, and the UK have begun to develop guidelines or standards for school furniture, but the New Jersey commission will need to determine whether any standards based on current U.S. student populations are available.

The commission is also tasked with determining the funding resources necessary to develop and support high-quality ergonomics education programs. The cost estimates will include not only resources required to develop information and program materials but also funding for teacher training, appropriate curriculum and materials, and appropriate facilities. Many technology programs have faltered because of lack of staff support. Computers have been provided to schools, but teachers have not been trained to

use them or integrate them into classroom activities and the curriculum. Funding for computers often cannot be used for appropriate tables, and the tables and desks that are in use may have no relationship to the sizes of the students using them.

Six months after the New Jersey Ergonomics in Education Study Commission begins examining ergonomics issues, it will issue a final report with an implementation plan to the governor and legislature and then disband. This effort can serve as a model to other states and a message to the U.S. Department of Education.

Scope of the Problem

Few teachers know enough about ergonomics to be able to teach children about the hazards of repetitive motion disorders and how to protect against them. The education of teachers in colleges and universities, as well as their continuing professional development, should include ergonomics as it relates to the educational environment, their students, and their own occupational environment.

More children 8–18 years of age use computers and the Internet than any other age group in the United States (see Figure 1 on page 6; United States National Telecommunications and Information Administration, 2002). Children and teachers are surrounded by technology in schools. By the fall of 2001, 99% of U.S. schools had Internet access, and as more computers are added, the student-to-computer ratios continue to decline (Tabs, 2002).

Children use computers at school, and outside school they may also use video games, cell phones, or organizers. Their exposure is significant, and they lack even the protection provided to employees in work environments. Although OSHA repetitive motion disorder standards were rescinded, many employers now provide ergonomics education and adjustable chairs and limit the loads that employees carry. Students typically receive no ergonomics education, use furniture that is not designed to fit them or is not adjustable, and carry backpack loads equivalent to 10% of their body weight (Forjuoh et al., 2003).

In the United States, 52,000 teenagers and young adults under the age of 30 are receiving disability payments through the Social Security Administration because of musculoskeletal disorders (Hainsworth, 2002). If the population under 30 years old increasingly becomes disabled because of musculoskeletal disorders contracted during their education and before they are employed, society will have a problem. Social Security is not equipped to provide long-term disability for the lifetime of large numbers of young

continued on page 6

3rd Annual User-Centered Product Design Award

By *Dianne McMullin & Stan Caplan*

Have you designed an innovative consumer product? Do you know of someone that has developed a product with outstanding usability or appearance? Do you wish to recognize the designer of a particularly good user-centered design?

For the third year, the Consumer Products Technical Group is sponsoring a product design competition that will emphasize both product design and the methods used to specify and achieve the design. Emphasis will be placed on innovative and user-centered approaches to human factors and industrial design. Consideration is limited to products or systems that are purchased for use in the home or in the workplace or while the user is mobile. They include consumer, commercial, and medical products but exclude military equipment or systems. The product or system being nominated must be operational and capable of being marketed with no more than minimal changes.

Nominations will be accepted from individuals nominating others or themselves. Award candidates must be members of HFES but do not have to be members of CPTG.

The nominations should be submitted in electronic form and should adhere to the following format:

1. Cover sheet (separate file), including the product name and the name(s) of person/persons being nominated and their title(s)
 - Names of team members that worked on the product and their titles
 - Name of contact person and his or her phone, mailing address, and e-mail
2. Body sheets, including
 - Name of product
 - State of development: Is this product currently on the market? If not, what remains to be done?
 - Abstract (200 words), including a concise statement of why you consider this to be an especially user-centered product and design process.
 - Product description including pictures, storyboards, and other materials that clearly explain the product's form and operation.

3. Targeted users
4. Reasons for product development: Why was this product developed? External considerations: What external constraints and/or requirements were imposed on the development of the product or process?

Judging Criteria

Please write a separate description for each of the six criteria that explains how the product or process meets that criterion.

- Functional obviousness: Upon first impression, does the design speak to the user in a way that makes the product appealing and apparently easy to use?
- Ease of operation: How easy is it to learn and perform tasks in various applicable usage modes, such as setup, normal use, failure recovery, maintainability, portability, and storability?
- Creativity/innovation: How is this product unique compared with similar products? How do usability and styling take advantage of product technology?
- Concept development: How was new user input created or past user data applied to influence the product or system concept?
- Design: How were user data generated or used for specifying design parameters or making design decisions?
- Evaluation: What was done to assess the usability of the product and the need for improvement? This could include iterative assessments made during the design process or feedback obtained in the market that could be used for subsequent versions of the product.

Tips

Judges' evaluations can be based only on the submission they receive, so a high-quality submission that clearly and concisely describes the criteria will be an asset. The submission should not be treated as a marketing tool. Statements about a product's quality should be substantiated by documenting results or a clear rationale that explains the how and why.

Administration

Judges will declare a winner by mid-July and may also identify submissions for honorable mention. If none of the submissions are judged to be of sufficiently high quality, the award will not be presented this year.

The winning product/system will be recognized at the 2004 HFES Annual Meeting, and the awardees will be asked to present a talk on the product and methodology. They will also be expected to submit a paper to *Ergonomics in Design* within two months of the meeting.

The deadline for submitting nominations for the award is *May 26, 2004*. Nominations should be submitted electronically to Dianne McMullin at dianne.l.mcmullin@boeing.com. For more information about the award or to volunteer for the selection committee, you may also contact Dianne McMullin at the same address. Additional information concerning CPTG and the 3rd User-Centered Product Design Award appears at the CPTG Web site, <http://cptg.hfes.org/>.



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HFES Establishes New Outreach Award

By *Richard J. Hornick*

The HFES Executive Council has established a new award, the O. Keith Hansen Outreach Award, to recognize the continuing importance of promoting awareness of the human factors/ergonomics profession in society at large. Since no existing award addresses this vital function of the Society, HFES will now honor members or nonmembers who engage in significant activities that make known the existence and value of the profession for the benefit of humankind.

The award has been established in recognition of members who have diligently and consistently promoted awareness of the benefit that HF/E provides to humankind, and these exceptional efforts should be honored. Further, the council considered that some individuals outside the Society also promote awareness of our professional interests in some significant way (for example, in newspapers, on television, and in mass-market books).

In establishing this award, the Council desired to honor permanently the exceptional efforts of one of the Society's own members to make known to society at large what this profession has to offer. That person is HFES Life Fellow Oliver Keith Hansen.

About the Award Honoree

Keith has devoted his professional career to practicing competent human factors research, application, and system engineering. However, in the course of his work, he has also found ways to help the Society to reach beyond its borders and expand its scope of applications to new, socially relevant areas of interest.

Keith stimulated the development of the HFES Los Angeles and Orange County Chapters in several official capacities, including as president and director. He worked on three annual meeting committees and introduced several innovations to their formats. In 1979–1980, in conjunction with the Federal Election Commission and the California Secretary of State's office, he initiated a human factors program in election technology.

He served on the HFES Public Relations Committee from 1989 to 1996 and was chair of that committee from 1990 to 1995. In that capacity, Keith established an HFES speakers corps, a roster of volunteer members. He conceived, scripted, and directed a promotional videotape, "Human Factors and Ergonomics: The Profession and the Society," which is available as a resource to members (see the HFES Web site). He upgraded, operated, and— with on-site support of his wife, Venita—hosted the HFES exhibit operations at more than 50 professional society conventions, conferences, and expos with attendances of more than 200,000 engineers, scientists, and practitioners. For several HFES annual meetings, Keith was a force behind the scenes, a person who successfully arranged for interviews with the press for the Society's leaders and for public radio programming. He also generated the idea of video interviews of the Society's pioneering leaders. He did many of these things at his own expense.

Keith sought out opportunities to address specialized areas. For example, he lectured on human factors and iatrogenics at Irvine Medical School Grand Rounds, thereby introducing new MDs to the aims, methods, and virtues of the HF/E profession as an adjunct to the entire health care field.

The HFES Executive Council agreed that Keith Hansen is the person who readily embodies everything that this award is intended to address. Future recipients will know that their efforts have merited the award because they will have demonstrated the essence of Keith's career-long outreach efforts.

Nominations for the O. Keith Hansen Outreach Award should be submitted to HFES Executive Director Lynn Strother by March 30. Nomination guidelines may be found on the web at <http://www.hfes.org/MemberDesk/04awards.html>.

Richard Hornick is an Executive Council member and chair of the Professionalism Subcouncil, which includes oversight of the Awards Committee.

2004 HFES Awards Subcommittees

By *Jack Stuster, Awards Committee Chair*

I am pleased to announce the chairs of the awards subcommittees for this year and their contact information if you have questions. As noted in the January issue (page 7), please send nomination packages to Lynn Strother at HFES (P.O. Box 1369, Santa Monica, CA 90406-1369, fax 310/394-2410, lynn@hfes.org). The deadline is *March 30, 2004*, not April 26 as noted earlier.

Jerome H. Ely Human Factors Article Award

William C. Howell, Chair
480/983-0886, whowell@imap4.asu.edu

Distinguished International Colleague Award

Waldemar Karwowski, Chair
502/852-7173, karwowski@louisville.edu

Paul M. Fitts Education Award

F. Thomas Eggemeier, Chair
937/229-2602, thomas.eggemeier@notes.udayton.edu

A. R. Lauer Safety Award

Brian Peacock, Chair
281/333-5313, brianpeaco@hotmail.com

Alexander C. Williams, Jr., Design Award

Charles O. Hopkins, Chair
217/762-4606, chopkins@monticello.net

Alphonse Chapanis Best Student Paper Award

Kermit Davis, Chair
513/558-2809, kermit.davis@uc.edu

continued on next page

Jack A. Kraft Innovator Award

Rene de Pontbriand, Chair
410/278-5947, rdepontb@arl.army.mil

Arnold M. Small President's Distinguished Service Award

Betty M. Sanders, Chair
713/984-9191, humanomic@aol.com

Best Ergonomics in Design Article Award

John F. (Jeff) Kelley, Chair
jfkkelley@us.ibm.com

O. Keith Hansen Outreach Award

Richard J. Hornick, Chair
949/240-1900, horndoc@aol.com



2004 FY Human and Social Dynamics Competition

The Human and Social Dynamics (HSD) priority area of the National Science Foundation (NSF) will be featured in the 2004 FY competition. With the HSD area of study the NSF hopes to encourage research and education developments that will advance understanding of the complex causes and ramifications of change, with an emphasis on understanding the dynamics of human and social behavior in change.

This year's competition will highlight three topical emphasis areas (agents of change, dynamics of change, and decision making and risk) and three resource-related emphasis areas (spatial social science, modeling and human and social dynamics, and instrumentation and data resource development).

NSF will award between 40 and 60 standard or continuing grants in the competition across all emphasis areas. All letters of intent (required) for the grants are due by *March 3, 2004*, and the deadline for full proposals is *March 30, 2004*.

For more information, go to <http://www.nsf.gov/pubsys/ods/getpub.cfm?nsf04537>.

New NIH Funding Program

The National Institute of Health (NIH) has recently unveiled its newest funding program, the Director's Pioneer Award, to encourage high-risk research. The new award program is designed to identify and fund exceptionally creative individuals to allow them to develop and test far-ranging ideas. Five to 10 Director's Pioneer Awards will be granted in 2004, with funding ranging up to \$500,000 a year for five years.

Nominations for awards in several different research areas related to the improvement of health, including behavioral and social sciences, will be accepted between *March 1* and *April 1, 2004*. Information about the Director's Pioneer Awards is available on the NIH Web site at <http://www.nihroadmap.nih.gov/highrisk/initiatives/pioneer>.



Executive Council Midyear Meeting

The 2004 Midyear Meeting of the HFES Executive Council will be held April 15–17 at the Sheraton New Orleans Hotel. Members who are not part of the Executive Council and are interested in attending should contact HFES Executive Director Lynn Strother at 310/394-1811, fax 310/394-2410, lynn@hfes.org.

Nomination Ballots To Be Mailed

Nomination ballots for the HFES elections will be mailed to Full Members on March 15. Completed nomination ballots are due April 26.



Military and Human Factors Psychology Advocacy

By *Gerald P. Krueger*

Three HFES members (James R. Callan, William C. Howell, and Gerald P. Krueger) joined 11 American Psychological Association (APA) members to participate in the APA Public Policy Office's 11th Science Advocacy Training Workshop on September 27–29, 2003, in Washington, D.C. Training topics included inside views of how the congressional legislative process deals with science and technology issues, the business of congressional S&T committees, effective communication strategies in dealing with Congress, defense legislation and inside tips for defense science advocacy, and media training on do's and don'ts for science advocates. Participants visited their own representatives' or senators' offices to advocate on behalf of military behavioral science research.

Howell moderated a panel presentation entitled "Psychological Science in Support of the Soldier," held for congressional staff members. The overriding message of the briefings was the importance of continued support for behavioral sciences research to U.S. military forces and the implications of much of this work for homeland defense.

Topics covered in the briefings and the ensuing question-and-answer period included human factors psychology; ergonomics in design; physiological and psychological stressors; survival, escape, and evasion training; recruitment for high-stress jobs; quality of life for military members and their families; and retention of trained workers.

The presentations included the following:

- Gerald P. Krueger, Wexford Group, International: "Chemical-Biological Protective Clothing and Equipment Effects on Performance of Soldiers and First Responders"
- Colonel Robert Roland, National Defense University: "POWs: Psychological Science and Services"
- Howard Weiss, Purdue University's Military Family Research Institute: "Quality of Life, Retention, and Readiness"

Krueger's talk, which highlighted numerous human factors considerations of chemical-biological protective clothing, was enlivened by a demonstrator wearing components of the Joint Services Light Integrated Suit Technology (JSLIST), the protective gear worn by soldiers and marines last March in Iraq.

Photos from the presentations on September 29 can be viewed at <http://www.apa.org/ppo/issues/sciworkshoppic03.html>.

Gerald P. Krueger, a retired colonel, spent 25 years in the Army Medical Service Corps conducting and managing occupational and preventive medicine research. He specialized in measurement and prediction of soldier performance in harsh working environments. Today, as a science consultant for the Wexford Group International in Vienna, Virginia, Jerry does human factors consulting on a diversity of DoD and DOT projects. ☒

LAB REPORT

Texas Tech University Visual Performance Laboratory

By Patricia R. DeLucia, Texas Tech University

The Visual Performance Laboratory at Texas Tech University is conducting human factors-related research on several topics with implications for medicine and transportation safety.

Tasks relevant to transportation are measured with tools that permit real-time simulations of moving three-dimensional environments and interactive control of those environments. Displays can be viewed with a 6' x 8' rear-projection screen, helmet-mounted display system, or stereoscopic glasses. Tasks relevant to medicine are measured with custom-made apparatus housed with miniature cameras, borescopes, video monitors, and surgical graspers.

Human-centered design of image-guided interventions. The long-term goal of this research is to improve the design of image-guided interventions, particularly the design of imaging devices used in minimally invasive surgeries (MIS). We employ a human-centered approach to measure the relationship between specific properties of an imaging device (e.g., location and number of viewing perspectives, field of view) and performance on tasks that are relevant to MIS. Results will lead to improvements in the design of image-guided interventions and, ultimately, to more effective surgical procedures.

Visual performance in younger and older drivers. The long-term goal of this research is to evaluate age differences in tasks relevant to driving. Because of limits in visual acuity, drivers cannot see an entire traffic scene clearly with a single glance. They scan the scene with eye movements, temporarily store information from each glance in memory, and mentally extrapolate the motion of cars that cannot be viewed continuously. It has been established that cognitive processes decline with age. In past research, we demonstrated age differences in judgments about collisions with simulations of car-following scenes. In current research, we measure age differences in judgments about the reappearance of such scenes after a brief interruption. Results will lead to recommendations for driver training and awareness.

continued on page 7

Wesley (Wes) Woodson (85) was a pioneer in the human factors field and was one of the founders of the Human Factors and Ergonomics Society. He was a native of Hutchinson, Kansas, and graduated from Southwestern College in Winfield, Kansas, in 1941. Wes began his professional career in 1946 at the U.S. Navy Electronics Laboratory in San Diego, California. During his 10 years at the laboratory, he was involved in a wide variety of psychophysical studies involving visual and auditory communication, motor performance, and anthropometric research for naval weapons systems.

During this period Woodson published a widely used book, *Human Engineering Guide for Equipment Designers*, which has been translated into several languages and is recognized internationally.

In 1956 Woodson joined the newly formed human factors group at General Dynamics Convair in San Diego. He headed this group, which researched the human interface with military and commercial aircraft. This led to positions in several U.S. Army programs and the NASA manned space program. At the astronautics division, Wes headed the life sciences group. There he became involved in the Mercury, Gemini, Apollo, Military Orbiting Lab, and Lunar Excursion Module programs.

In 1965 Woodson formed the consulting company Man Factors, Inc., which provided consulting to industry and the military. For the next 17 years, Man Factors, Inc., was one of the best-known human factors consulting companies.

Wes also brought his extensive human factors experience to the public. As a well-known lecturer, he addressed, among others, students in the University of Southern California Safety and Systems Management program. Before retirement, Woodson prepared another book, *Human Factors Handbook*, and its publication coincided with his retirement on May 1, 1981.

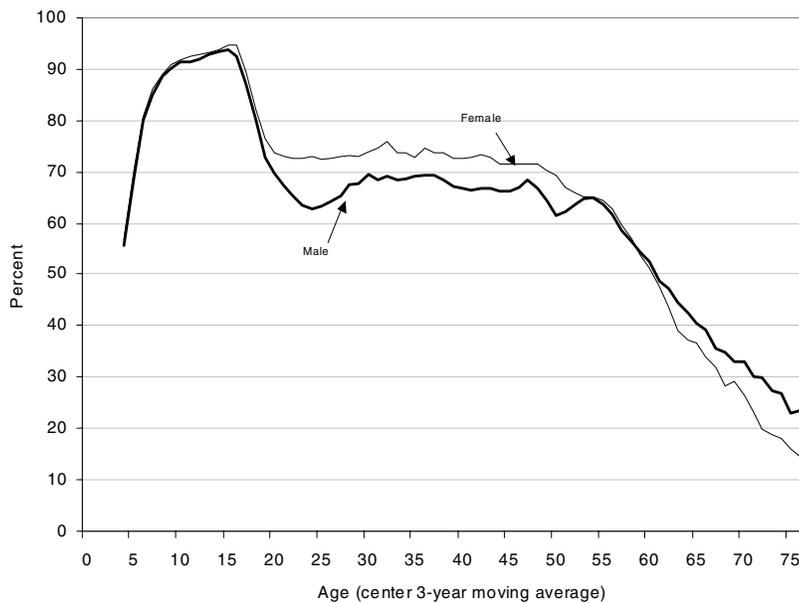
During his retirement Wes continued to consult but also pursued his musical, artistic, model-making, and tennis interests. He also continued to lecture and published yet another human factors book, *Human Factors Design Handbook*.

Woodson was extremely active in the affairs of HFES from its inception. He was a founding member and worked on the formation of the Bylaws and Articles of Incorporation. He held the positions of president, vice-president, and chair of the Publications Board. Wes received the Jack A. Kraft Award in 1974 and was a Fellow of the Society. He recently received the coveted Founders Award from the International Ergonomics Association.

Human factors has lost a good friend, and he will be missed.

—Tom Black ☒

Computer Use



Internet Use

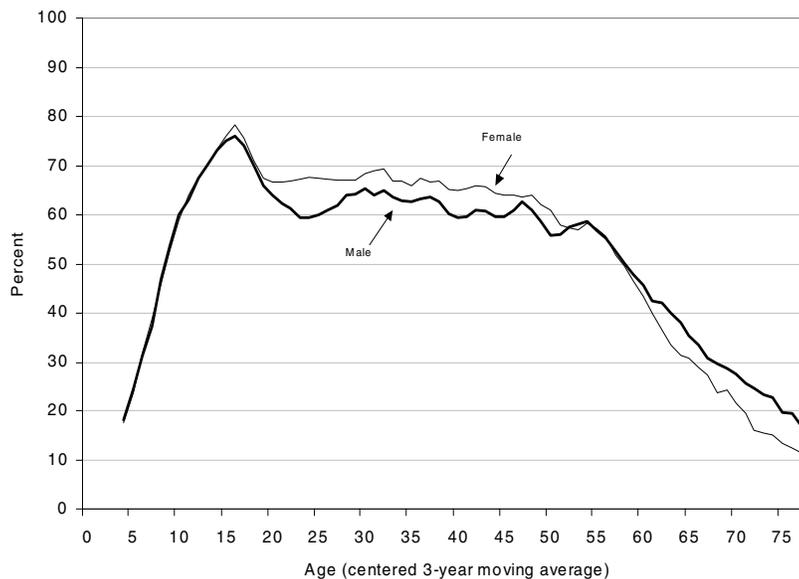


Figure 1. Computer and Internet use distribution by age and gender, September 2001, percentage of persons age 3 to 80. (Source: NTIA and ESA, U.S. Department of Commerce, using U.S. Census Bureau Current Population Survey Supplements.)

people who have never been employed. The increasing percentage of the population over 60 years who will be drawing on Social Security are already expected to tax this system beyond its limits.

The consequences of musculoskeletal disorders warrant serious study of their prevention. Ergonomists who have worked or conducted research in schools on the ergonomics of computer use and issues such as heavy backpacks have found that many improvements can be simple and inexpensive.

Positive Steps

Concern is rapidly increasing around the world. The scope of the HFES Education Technical Group was expanded in 2002 to include educational ergonomics. Following one single-session symposium at the IEA/HFES 2000 Congress, the International Ergonomics Association approved the formation of the Ergonomics for Children and Educational Environments (ECEE) International Ergonomics Association (IEA) Technical Committee. At the IEA 2003 Congress in Seoul, the ECEE presented four symposia with 17 papers on ergonomics and children; almost as many were presented in other sessions at that meeting.

The ECEE chair organized a tour of an elementary school in Seoul in conjunction with the IEA 2003 Congress; a report on the tour can be found on the ECEE Web site (on the “ECEE Around the World” page, <http://education.umn.edu/kls/ecee/eceeworld.html>).

The UK Ergonomics Society’s journal, *Ergonomics*, is planning a special issue on Ergonomics in Education. Papers will be accepted through February 29, 2004. For details, contact Professor Stephen Legg, (s.j.legg@massey.ac.nz).

Sharing of information, standards, and ideas can help in the improvement of schools worldwide. Janis Gedrovics, a professor in Latvia who teaches a course entitled “Ergonomics in the Schools” at a teacher’s college in Riga, observed that ergonomics is about more than health. He sees teaching ergonomics in school as part of the process of preparing children for their roles not only in the workplace but also in society.

To make the most of the New Jersey Ergonomics in Education Study Commission, ergonomists and concerned parents in other states can make their own political representatives aware of their concern about ergonomics issues in schools. If we know our children are at risk, we must protect them.

References

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Cheryl Bennett organized and chairs the Ergonomics for Children and Educational Environments (ECEE) IEA Technical Committee. ☒

Lab Report

(continued from page 5)

Current Externally Funded Projects

Visual memory for moving scenes and implications for transportation safety. Advanced Research Program, Texas Higher Education Coordinating Board. The goal of this research is to assess whether distortions occur in human memories for scenes that simulate self-motion through a scene. We also evaluate whether the nature of the optical-expansion pattern influences performance. Results will have theoretical implications for models of scene memory and practical implications for transportation.

Contact Lab Director Patricia DeLucia, Psychology Department, MS 2051, Texas Tech University, Lubbock, TX 79409-2051; 806/742-3711x259; pat.delucia@ttu.edu.

Patricia DeLucia is an associate professor and coordinator of the Human Factors Psychology Program in the Psychology Department at Texas Tech University. She completed her Ph.D. at Columbia University in 1989 and subsequently conducted postdoctoral research at Wright-Patterson Air Force Base until 1991.



consulting, or service to the United Nations and similar organizations) and (2) membership in an IEA Federated (e.g., HFES) or Affiliated Society for at least 10 years. A list of past recipients can be found at the IEA Web site, <http://www.iea.cc/>.

If you would like to recommend an HFES member for this award, please contact Executive Director Lynn Strother (lynn@hfes.org) as soon as possible.



CALENDAR

Announcement deadlines: 1st day of the month prior to the desired issue; for events or deadlines within the first 3 weeks of a month, send information at least 2 months in advance. Items are published according to space availability.

★ **12th Conference of the New Zealand Ergonomics Society**, August 5–6, 2004, Copthorne Manuels, Taupo, New Zealand; NZES Conference 2004, P.O. Box 300 540, Albany, Auckland, New Zealand; www.ergonomics.org.nz; david.tappin@coffe.co.nz.

★ **7th IASTED International Conference on Computers and Advanced Technology in Education – CATE 2004**, August 13–16, 2004, Kauai, HI; <http://www.iasted.com/conferences/2004/hawaii/cate.htm>.

★ **ECCE 12: 12th European Conference on Cognitive Ergonomics**, September 12–15, 2004, University of York, UK; <http://www.ecce12.org.uk>.

HFES 48th Annual Meeting, September 20–24, 2004, New Orleans, Louisiana; info@hfes.org; <http://www.hfes.org/meetings/2004menu.html>.

★ *Indicates new listing.*



IEA News

Call for Submissions

The International Ergonomics Association is inviting applications for the 2004 Liberty Mutual Prize in Occupational Safety and Ergonomics. With this award the IEA seeks to recognize outstanding original research leading to the reduction or mitigation of work-related injuries.

Criteria for the award include significant advancement of theory and understanding, innovation, and development of new directions or approaches. The award recipient will receive a prize of \$5,000. Applicants need not belong to the IEA or any of its constituent groups. To be considered for the Liberty Mutual Prize, please submit a letter of application and a research paper in the domain of accident prevention, injury reduction, and/or early return to work, including rehabilitation, by *April 1, 2004*.

Those wishing to be considered for the 2004 prize should submit an application, including separate cover letter and paper, both in electronic format, to the IEA Awards Committee chair at the following address: Waldemar Karwowski, Chair, IEA Awards Committee, Center for Industrial Ergonomics, Lutz Hall, Room 445, University of Louisville, Warnock St., Louisville, KY 40292, karwowski@louisville.edu.

IEA Fellow Nominations Open

The International Ergonomics Association invites HFES members to recommend candidates for the IEA Fellow Award. The IEA Fellowship was created to recognize extraordinary or sustained, superior accomplishments of an individual to the ergonomics profession or discipline at an international level. To be considered for the award, nominees must meet two eligibility criteria: (a) international service (including such activities as service to the IEA, an extensive publication record in international journals, international

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Opinions expressed in BULLETIN articles are those of the authors and should not be considered as expressions of official policy by the Human Factors and Ergonomics Society.



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FLASH!

MARK YOUR CALENDARS!

**Officer and Executive Council
nomination ballots will be
mailed March 15, 2004.**

NOTICE:

**Awards nominations are now due
March 30, 2004 (not April 26,
as previously mentioned).**

PERIODICALS
POSTAGE PAID
AT
SANTA MONICA, CA
AND ADDITIONAL
OFFICES